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ASSESSMENT AND PLANNING DIVISION

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VEGETATION RESOURCES OF THE VERNON MAP SHEET AREA

N.T.S. Map 82L

Volume 2 - Technical Data

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ERRATA

The following plant species names are incorrect throughout the text and tables in Volume II:

In Text	Correct Name
western meadowrue	western meadow-rue
smooth woodrush	smooth wood-rush
western chokecherry	choke cherry
prairie koelaria	prairie koeleria
luetkia	luetkea
swamp black gooseberry	black swamp gooseberry
Nuttal's pussytoes	Nuttall's pussytoes

ABSTRACT

The vegetation of the Vernon map sheet area is diverse in response to variation in climate and site conditions. The diversity of the plant cover is characterized by vegetation types.

The vegetation of the area is characterized by two Regions: the Dry Interior and Interior Wet Belt Regions. Within each Region patterns of zones (climatic climax potential) and subzones (successional patterns) are recognized.

A standard reconnaissance vegetation survey was implemented and 290 vegetation plots were located. Computer analysis of the plots resulted in the identification of forty-five vegetation types, representing seral and climax vegetation in the Dry Interior and Interior Wet Belt Regions. For each type the relationships between environmental characteristics and vegetation were assessed. The evaluation of these relationships is important for the application of the vegetation information to resource management.

Interpretations of each vegetation type are made for wildlife, forestry and recreation values. The interpretations provide information which can be used to assess relative values of vegetation for different uses.

ACKNOWLEDGEMENTS

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As well as serving on the editorial committee Jim van Barneveld provided motivation and support, and Dave Low assisted in the formulation of interpretations for wildlife management.

Rod Davis and Bob Marsh, of the Air Studies Branch, provided climate data which characterized the Regions and Sections of the report area.

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chapter one

INTRODUCTION

1. INTRODUCTION

The vegetation type descriptions, soils-vegetation legends and key to the vegetation types are technical aids used for the application of vegetation data to resource management.

Optimum resource management can be achieved through an understanding of the natural systems. The interrelationships of the environmental conditions of the landscape, specifically soil and the vegetation, are the key to effective land management.

chapter two

TECHNICAL DATA

2. TECHNICAL DATA

2.1 VEGETATION TYPE DESCRIPTIONS

Each vegetation type is described in the accompanying tables. Vegetation and physical site data are presented in a simple tabular format and photographs of most types are included. Figure 1. shows the relationship of vegetation types to one another based on the presence of similar species. The colours and upper case letters in circles represent broad vegetation groups (see Section 3.1 - Vegetation Resources of the Vernon Map Sheet Area, Volume I) and are used to reference tables in Volume I. The order of type numbers is a result of the computer analysis. Single plots, representing distinct kinds of vegetation which were only sampled once, (indicated as SR73031 in Figure 1.) are also described as vegetation types.

Explanation of Terms

All terms are from the Standard Data Collection Form-1979. Definitions for these terms are contained in Manual for Describing Ecosystems in the Field (Walmsley, et al ed., 1980).

The box at the top of the table contains the vegetation type number (example, 009-10)[1] and the vegetation type name.

Vegetation Characteristics

The Region, Section, zone and subzone[2] in which each vegetation type occurs are listed. A vegetation type may occur in more than one Region, Section, zone and subzone under a limited variety of conditions.

The successional stages represented by each vegetation type are listed. A vegetation type may encompass two or more successional stages.

Stand appearance is a descriptive term of overall stand (forested or non-forested) structure.

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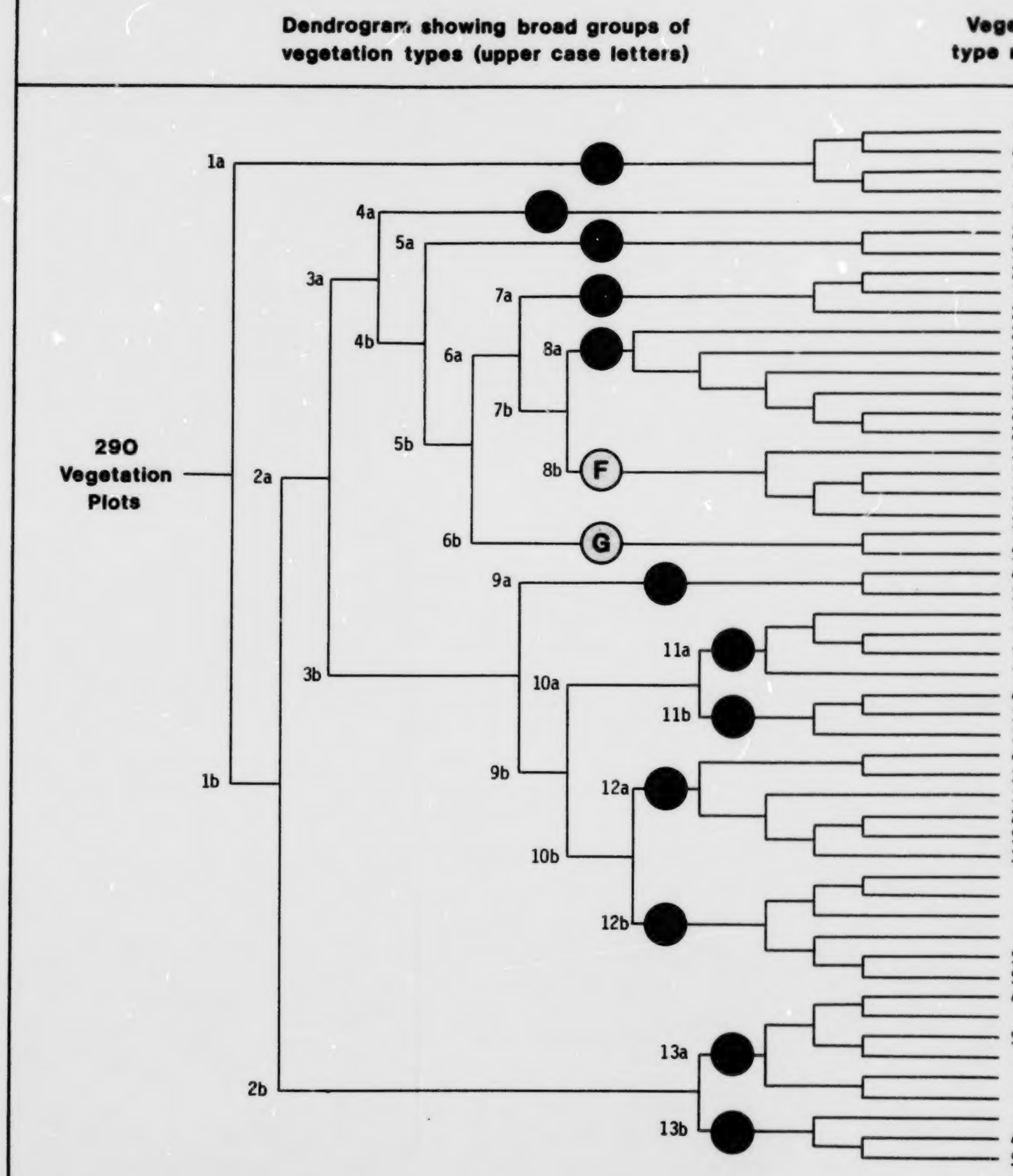
[1] The project number 009, which refers to the Vernon map sheet study, is repeated in every vegetation type number.

[2] Technical terms are defined in Appendix A - Vegetation Resources of the Vernon Map Sheet Area, Volume I.



Vegetation type numbers — **Vegetation type names and single releves**

15. Needle-and-thread grass - drooping brome grass - beardless bluebunch wheat grass
43. Sandberg's blue grass - yellow salsify - beardless bluebunch wheat grass
16. Ponderosa pine - common snowberry - Sandberg's blue grass - Columbia gromwell
17. Ponderosa pine - common snowberry - beardless bluebunch wheat grass - common yarrow
10. Lodgepole pine - common juniper - pine grass - subalpine fleabane
27. Trembling aspen - willows - pine grass - western meadowrue
SR 73367
20. Rocky Mountain Douglas-fir - common saskatoon - pine grass - racemose pussytoes
18. Rocky Mountain Douglas-fir - common snowberry - birch-leaved spirea - pine grass
21. Rocky Mountain Douglas-fir - ponderosa pine - tall Oregon-grape - pine grass
25. Lodgepole pine - Oregon boxwood - showy aster - heart-leaved arnica
26. Rocky Mountain Douglas-fir - common paper birch - birch-leaved spirea - large-leaved rattlesnake orchid
28. Rocky Mountain Douglas-fir - tall Oregon-grape - pine grass - mountain sweetcicely
23. Lodgepole pine - soopolallie - pine grass - showy aster
24. Rocky Mountain Douglas-fir - roses - pine grass - white-flowered hawkweed
22. Rocky Mountain Douglas-fir - birch-leaved spirea - pine grass - showy aster
30. Rocky Mountain Douglas-fir - soopolallie - Oregon boxwood - common western pipsissewa
33. Western red cedar - western thimbleberry - birch-leaved spirea - large-leaved rattlesnake orchid
32. Common paper birch - western red cedar - Rocky Mountain maple - rough-fruited fairybells
36. Common paper birch - willows - Oregon boxwood - blue-bead clintonia
19. Lodgepole pine - common juniper - pine grass - kinnikinnick
SR 73180
44. Western thimbleberry - fireweed - oak fern
34. Trembling aspen - fireweed - Canadian bunchberry
11. Lodgepole pine - alpine fir - black blueberry - blue-bead clintonia
12. Lodgepole pine - alpine fir - grouseberry - violets
14. Lodgepole pine - alpine fir - Oregon boxwood - one-sided wintergreen
13. Rocky Mountain Douglas-fir - alpine fir - Oregon boxwood - Canadian bunchberry
40. Rocky Mountain Douglas-fir - western red cedar - Oregon boxwood - western bracken
37. Western larch - western red cedar - Oregon boxwood - common western pipsissewa
35. Western larch - western red cedar - soopolallie - northern twinflower
41. Common paper birch - western red cedar - western thimbleberry - trailflower
39. Rocky Mountain Douglas-fir - western hemlock - black blueberry - rough-fruited fairybells
38. Rocky Mountain Douglas-fir - western hemlock - birch-leaved spirea - northern twinflower
29. Rocky Mountain Douglas-fir - western hemlock - Oregon boxwood - one-sided wintergreen
SR 73213
31. Rocky Mountain Douglas-fir - western hemlock - black blueberry - blue-bead clintonia
1. Western hemlock - western red cedar - western yew - blue-bead clintonia
2. Western hemlock - western red cedar - unifoliate-leaved foamflower - oak fern
3. Western hemlock - alpine fir - black blueberry - blue-bead clintonia
4. Western hemlock - western red cedar - devil's-club - common lady fern
SR 73212
SR 73188
45. Black blueberry - Sitka valerian - green false hellebore - oak fern
7. Alpine fir - white-flowered rhododendron - black blueberry - Sitka valerian
SR 73031
9. Alpine fir - Sitka mountain-ash - blue-bead clintonia - oak fern
8. Alpine fir - white-flowered rhododendron - five-leaved creeping raspberry - Sitka valerian
6. Alpine fir - black blueberry - grouseberry - broad-leaved arnica
5. Alpine fir - bracted lousewort - broad-leaved arnica - Sitka valerian
42. Alpine fir - subalpine fleabane - sedges - smooth woodrush
SR 73125

[1] Vegetation types are arranged in the order of sorting by computer analysis. Numbers with lower case letters (1a) at dendrogram steps refer to descriptions in Key to Broad Vegetation Groups.

Figure 1.1 Relationships Among Vegetation Types[1]

Species Composition

In this table the dominant (those species having a dominant cover combined with a high constancy relative to other species) and associate plants (those species of relevance with high constancy values but lower cover ratings) and their percent cover are listed. The layer terminology is consistent with that of the standard data collection form; the total layer percent cover is given in brackets with the layer name.

Character Species

Character species are those present or absent which best characterize the vegetation type.

Terrain and Soils

Terrain descriptions utilize standard Terrestrial Studies Branch terminology (E.L.U.C. Secretariat, 1976).

Soil association symbols are listed for each vegetation type. These represent actual soil associations on which the vegetation was sampled. The vegetation may be found on additional soil associations.

Topography

Elevation is indicated as an altitudinal range within which each vegetation type occurs.

The steepness of the slopes on which each type was found is also described as a range.

Aspect, in degrees, is usually indicated as a range but may be a single direction or described as all aspects (vegetation type occurs on a variety of aspects). Landscape position is a combined description of site position macro and site surface shape from the data manual.

Ecology

The ecology box is used for comments on succession, expected climax, disturbance response, values, nutrient regime, moisture status and relationships between site conditions and plants.

It serves to highlight important characteristics and processes pertaining to the functioning of the ecosystems of which the vegetation types are components.

Climate

Where available, information is presented for climatic moisture deficit or surplus, growing degree days and freeze free period. This information was obtained from Climate Parameter Maps (R.A.B., 1979). In other cases more general comments are given.

009-15 Needle-and-thread grass – drooping brome grass – beardless bluebunch wheat grass

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: dis-climax
Stand appearance: steppe

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: ponderosa pine and ponderosa pine - Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer	no shrubs			
Low shrub layer (variable)			big basin sagebrush	varies
Herb layer (60)	needle-and-thread grass drooping brome grass common yarrow	30 5 < 5	beardless bluebunch wheat grass knapweeds arrow-leaved balsamroot	varies varies 5
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present	Absent
big basin sagebrush needle-and-thread grass drooping brome grass common yarrow knapweeds arrow-leaved balsamroot brittle prickly-pear cactus	western hemlock alpine fir western thimbleberry oak fern Canadian bunchberry

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, fluvial fans, lacustrine and morainal blankets
Soil Texture: silt loam to clay loam
Soil Association: GH, S, H, LY
Moisture regime: very xeric to subxeric
Drainage: well drained

TOPOGRAPHY

Elevation: 360-820 m
Slope: 11-60%
Aspect: 135-225°
Landscape position: middle slope, shedding and normal

ECOLOGY

- this, the driest vegetation type of the study area, is found on a variety of materials on south-facing slopes
- sites have been subject (and may still be) to intensive grazing
- moisture availability is very low and nutrients are not in an available form

CLIMATE

Climatic Moisture Deficit/Surplus: -400 to -200 mm
Growing Degree Days: 1700->2100
Freeze Free Period: 100-140 days

009-43 Sandberg's blue grass – yellow salsify – beardless bluebunch wheat grass

VEGETATION CHARACTERISTICS

Region: Dry Interior
Section: Vernon
Successional stage: dis-climax
Stand appearance: steppe

Zone: Interior Rocky Mountain Douglas-fir
Subzone: ponderosa pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer (< 5)			ponderosa pine	< 5
Low shrub layer (rare)			common snowberry	< 5
Herb layer (80)	Sandberg's blue grass needle-and-thread grass yellow salsify common yarrow	25 varies < 5 5	beardless bluebunch wheat grass timber milk-vetch Columbia gromwell yellowbell fritillary	varies 5 < 5 5
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present	Absent
Sandberg's blue grass	western hemlock
needle-and-thread grass	western larch
yellow salsify	western thimbleberry
common yarrow	soopolallie
Columbia gromwell	oak fern
yellowbell fritillary	Canadian bunchberry

TERRAIN AND SOILS

Terrain: lacustrine and morainal blankets
Soil Texture: silt loam to clay loam
Soil Association: H, GA, TE
Moisture regime: xeric
Drainage: well drained

TOPOGRAPHY

Elevation: 390-1310 m
Slope: 16-40%
Aspect: 90-270°
Landscape position: middle slope, shedding

ECOLOGY

- grasslands with beardless bluebunch wheat grass dominant
- succession to open forests of Rocky Mountain Douglas-fir will be slow
- severe moisture deficiencies and high surface temperatures limit productivity

CLIMATE

Climatic Moisture Deficit/Surplus: <-200 to -100 mm
Growing Degree Days: 1100-1900
Freeze Free Period: 80->140 days

Plate 1. (15) Needle-and-thread grass - drooping brome grass - beardless bluebunch wheat grass vegetation type

Plate 2. (43) Sandberg's blue grass - yellow salsify - beardless bluebunch wheat grass vegetation type

009-16 Ponderosa pine – common snowberry – Sandberg's blue grass – Columbia gromwell

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral, overmature seral
Stand appearance: parkland coniferous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: ponderosa pine and ponderosa pine - Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (15)	ponderosa pine Rocky Mountain Douglas-fir	10 7		
Tall shrub layer (7)	Rocky Mountain Douglas-fir ponderosa pine	5 < 5		
Low shrub layer (5)	common snowberry	< 5	Rocky Mountain Douglas-fir ponderosa pine	< 5 < 5
Herb layer (50)	Sandberg's blue grass Columbia gromwell needle grasses	30 5 10	yellow salsify beardless bluebunch wheat grass drooping brome grass common yarrow	< 5 varies < 5 5
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present		Absent
ponderosa pine Rocky Mountain Douglas-fir common snowberry Sandberg's blue grass Columbia gromwell needle grasses	yellow salsify drooping brome grass	western hemlock alpine fir western yew devils'-club oak fern common lady fern

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, lacustrine blankets, morainal and colluvial blankets
Soil Texture: sandy loam to clay loam
Soil Association: GA, G, KG, A, S
Moisture regime: subxeric to xeric
Drainage: well drained

TOPOGRAPHY

Elevation: 510-930 m
Slope: 16-65%
Aspect: 135-270°
Landscape position: middle slope, shedding

ECOLOGY

- disturbed open forest with grasses dominating the understory
- seral to Rocky Mountain Douglas-fir climax forest
- surface drought and high surface temperatures will severely limit revegetation

CLIMATE

Climatic Moisture Deficit/Surplus: -400 to -100 mm
Growing Degree Days: 1300-1900
Freeze Free Period: 80-100 days

009-17 Ponderosa pine – common snowberry – beardless bluebunch wheat grass – common yarrow

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral, overmature seral
Stand appearance: parkland coniferous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: ponderosa pine, lodgepole pine, ponderosa pine-Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (20)	ponderosa pine Rocky Mountain Douglas-fir	15 10		
Tall shrub layer (10)	Rocky Mountain Douglas-fir ponderosa pine	7 5	common saskatoon western chokecherry	< 5 < 5
Low shrub layer (20)	common snowberry birch-leaved spirea	varies 10	Rocky Mountain Douglas-fir common saskatoon western chokecherry	< 5 5 5
Herb layer (50)	common yarrow beardless bluebunch wheat grass	5 40	arrow-leaved balsamroot prairie koelaria	10 < 5
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present

- ponderosa pine
- Rocky Mountain Douglas-fir
- common snowberry
- birch-leaved spirea
- common yarrow
- beardless bluebunch wheat grass
- arrow-leaved balsamroot
- timber milk-vetch

Absent

- western hemlock
- alpine fir
- western yew
- devil's-club
- oak fern
- common lady fern

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, fluvial fans, morainal veneers over rock, morainal and colluvial blankets
Soil Texture: sand to clay loam
Soil Association: TW, GY, G, SH, H, CM, GA, C, KG, GH
Moisture regime: subxeric to xeric
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 375-1320 m
Slope: 19-70%
Aspect: 135-270°
Landscape position: upper slope and middle slope, shedding

ECOLOGY

- typical seral ponderosa pine parkland forests on steep south-facing slopes, leading to a climax of Rocky Mountain Douglas-fir
- severe moisture deficiencies and high surface temperatures inhibit revegetation

CLIMATE

Climatic Moisture Deficit/Surplus: -300 to 0 mm
Growing Degree Days: 1100-1900
Freeze Free Period: 80-140 days

Plate 3. (16) Ponderosa pine - common snowberry - Sandberg's blue grass - Columbia gromwell vegetation type

Plate 4. (17) Ponderosa pine - common snowberry - beardless bluebunch wheat grass - common yarrow vegetation type

009-10 Lodgepole pine – common juniper – pine grass – subalpine fleabane

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir

Subzone: Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	lodgepole pine	40	Rocky Mountain Douglas-fir	varies
Tall shrub layer (10)	alpine fir	5	lodgepole pine Engelmann spruce Rocky Mountain Douglas-fir	< 5 < 5 < 5
Low shrub layer (20)	common juniper Oregon boxwood black blueberry	< 5 10 < 5	alpine fir common saskatoon	5 < 5
Herb layer (85)	subalpine fleabane lupines racemose pussytoes strawberries	10 7 7 5	pine grass heart-leaved arnica grouseberry western meadowrue	75 20 15 5
Moss, lichen and liverwort layer (< 5)	unidentified mosses	< 5		

CHARACTER SPECIES

Present		Absent
lodgepole pine	lupines	ponderosa pine
alpine fir	racemose pussytoes	western chokecherry
common juniper	heart-leaved arnica	arrow-leaved balsamroot
Oregon boxwood	grouseberry	beardless bluebunch wheat grass
black blueberry		
subalpine fleabane		

TERRAIN AND SOILS

Terrain: morainal veneers over rock, morainal and colluvial blankets
Soil Texture: silt loam
Soil Association: SAA, KF, FH
Moisture regime: subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1510-1720 m
Slope: 16-40%
Aspect: 180°
Landscape position: upper slope and middle slope, shedding

ECOLOGY

- typical seral vegetation on south-facing high elevations slopes
- extremely slow rate of succession
- moisture availability low
- low nutrient status and a very low nutrient budget prohibits burning as a management tool

CLIMATE

Climatic Moisture Deficit/Surplus: >+100 mm
Growing Degree Days: 700-1100
Freeze Free Period: 60-80 days

009-27 Trembling aspen – willows – pine grass – western meadowrue

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral
Stand appearance: open to dense deciduous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: lodgepole pine, ponderosa pine - Rocky Mountain Douglas-fir and Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	trembling aspen	40	Rocky Mountain Douglas-fir	varies
Tall shrub layer (15)	willows	5	trembling aspen common saskatoon	10 < 5
Low shrub layer (30)	common saskatoon tall Oregon-grape	< 5 < 5	birch-leaved spirea western thimbleberry	5 < 5
Herb layer (45)	pine grass American vetch cream-colored peavine fireweed	25 5 5 < 5	western meadowrue brome grasses strawberries rough-fruited fairybells	varies 5 < 5 5
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present		Absent
trembling aspen willows common saskatoon tall Oregon-grape pine grass American vetch	cream-colored peavine western meadowrue	alpine fir white-flowered rhododendron Sitka valerian luetkia

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal veneers over rock and morainal blankets
Soil Texture: sandy loam to silt clay loam
Soil Association: ML, MN, AG
Moisture regime: subhygric
Drainage: moderately well drained to well drained

TOPOGRAPHY

Elevation: 890-[illegible]95 m
Slope: 0-16%
Aspect: 135-270°
Landscape position: middle slope, receiving

ECOLOGY

- open to closed trembling aspen stands with occasional Rocky Mountain Douglas-fir
- these sites may succeed to a climax of white spruce
- organic layer contributes to nutrient supply
- nutrient status is good as is available moisture

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to 0 mm
Growing Degree Days: 1100-1700
Freeze Free Period: 100-120 days

009	**SR 73367**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: dense coniferous forest
Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	lodgepole pine	60		
Tall shrub layer (5)	Engelmann spruce lodgepole pine	5 < 5		
Low shrub layer (45)	Oregon boxwood birch-leaved spirea Utah honeysuckle black blueberry	15 10 7 7		
Herb layer (70)	grouseberry pine grass western meadowrue lupines	35 15 10 7		
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present		Absent
lodgepole pine	lupines	ponderosa pine
Oregon boxwood		Rocky Mountain Douglas-fir
birch-leaved spirea		arrow-leaved balsamroot
grouseberry		beardless bluebunch wheat grass
pine grass		
western meadowrue		

TERRAIN AND SOILS

Terrain: morainal blanket
Soil Texture: silt loam
Soil Association: FH
Moisture regime: subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1620 m
Slope: 35%
Aspect: 90°
Landscape position: middle slope, shedding

ECOLOGY

-typical high-elevation forest cover after fire
-rich floristic diversity indicates good growing conditions and nutrient availability

CLIMATE

Climatic Moisture Deficit/Surplus: +100 mm
Growing Degree Days: 700-900
Freeze Free Period: 60-80 days

009-20 Rocky Mountain Douglas-fir – common saskatoon – pine grass – racemose pussytoes

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral, edaphic and climatic climax
Stand appearance: dense coniferous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: ponderosa pine, lodgepole pine, ponderosa pine Rocky Mountain Douglas-fir and Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	Rocky Mountain Douglas-fir	30	lodgepole pine ponderosa pine	varies varies
Tall shrub layer (20)	Rocky Mountain Douglas-fir	20	lodgepole pine common saskatoon	< 5 < 5
Low shrub layer (20)	Rocky Mountain Douglas-fir common saskatoon Oregon boxwood	5 5 < 5	birch-leaved spirea tall Oregon-grape	10 5 < 5
Herb layer (variable)	pine grass	varies	racemose pussytoes showy aster heart-leaved arnica common yarrow	5 < 5 < 5 < 5
Moss, lichen and liverwort layer (variable)	unidentified mosses	varies		

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir	racemose pussytoes	western hemlock
common saskatoon	showy aster	western red cedar
tall Oregon-grape		common lady fern
Oregon boxwood		devil's-club
pine grass		oak fern

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal and colluvial blankets
Soil Texture: sandy loam to silt clay loam
Soil Association: TW, SH, G, HN, CPA, LH
Moisture regime: submesic to mesic
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 379-900 m
Slope: 0-65%
Aspect: all aspects
Landscape position: upper slope to level, shedding and normal

ECOLOGY

- forests of Rocky Mountain Douglas-fir occasionally with lodgepole pine or ponderosa pine
- highly variable type leading to (edaphic or climatic) climax of Rocky Mountain Douglas-fir
- low moisture availability

CLIMATE

Climatic Moisture Deficit/Surplus: -300 to 0 mm
Growing Degree Days: 1100-1900
Freeze Free Period: 80 - >140 days

009-18 Rocky Mountain Douglas-fir – common snowberry – birch-leaved spirea – pine grass

VEGETATION CHARACTERISTICS

Region: Dry Interior
Section: Vernon
Successional stage: maturing climatic climax
Stand appearance: dense coniferous forest

Zone: Interior Rocky Mountain Douglas-fir
Subzone: ponderosa pine and lodgepole pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (70)	Rocky Mountain Douglas-fir	70		
Tall shrub layer (15)	Rocky Mountain Douglas-fir	15		
Low shrub layer (15)	Rocky Mountain Douglas-fir common snowberry birch-leaved spirea	5 5 5	common saskatoon tall Oregon-grape	< 5 5
Herb layer (15)	pine grass	15	large-leaved rattlesnake orchid sedges	5 < 5
Moss, lichen and liverwort layer (variable)	cushion moss	5	red-stemmed pipecleaner common moss feather moss	varies varies varies

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir common snowberry birch-leaved spirea pine grass large-leaved rattlesnake orchid cushion moss	alpine fir western hemlock devil's-club common lady fern

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: silt loam
Soil Association: S, GA, GN
Moisture regime: submesic to mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 360-990 m
Slope: 0-40%
Aspect: 270-90°
Landscape position: middle slope to lower slope, normal and receiving

ECOLOGY

- cool aspects result in lower moisture deficiencies
- growth is limited by lack of available moisture and low temperatures
- plant growth may be limited by lime accumulations in the soil

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to -100 mm
Growing Degree Days: 1300-1500
Freeze Free Period: 80-100 days

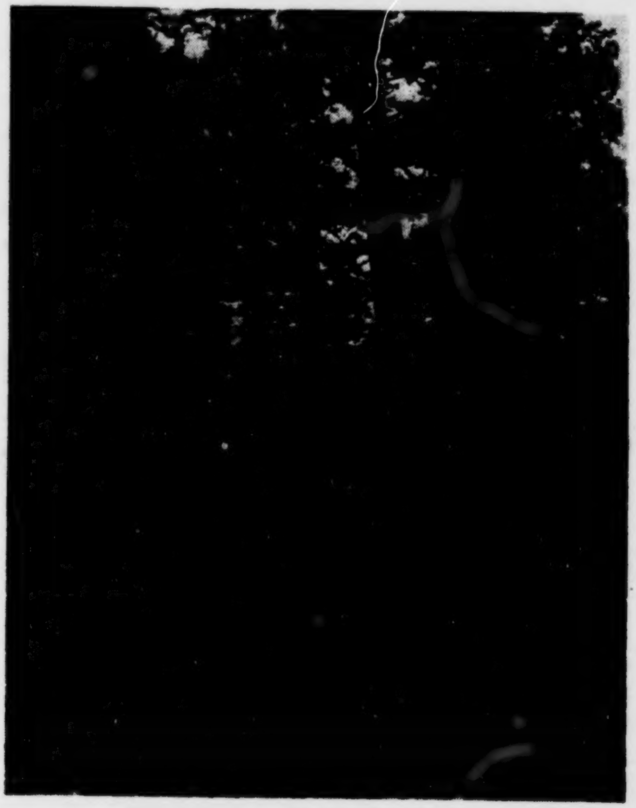


Plate 7. (20) Rocky Mountain Douglas-fir - common saskatoon - pine grass - racemose pussytoes vegetation type

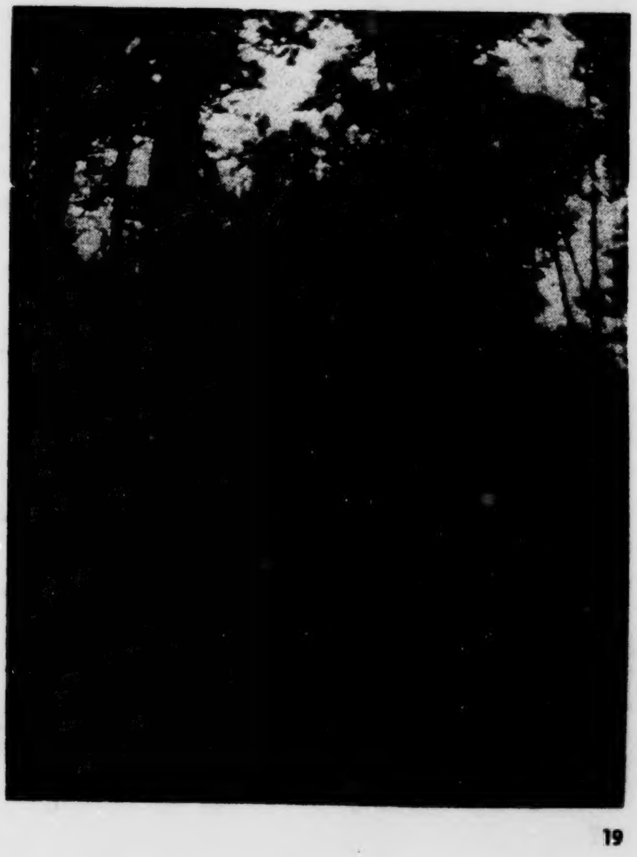


Plate 8. (18) Rocky Mountain Douglas-fir - common snowberry - birch-leaved spirea - pine grass vegetation type

009-25 Lodgepole pine – Oregon boxwood – showy aster – heart-leaved arnica

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone : Interior Rocky Mountain Douglas-fir, Interior western red cedar and Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine, Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	lodgepole pine	40	Rocky Mountain Douglas-fir	varies
Tall shrub layer (10)	Rocky Mountain Douglas-fir	5	common paper birch soopolallie	< 5 < 5
Low shrub layer (30)	Oregon boxwood soopolallie	10 varies	Rocky Mountain Douglas-fir black blueberry tall Oregon-grape Sitka mountain-ash	< 5 5 < 5 < 5
Herb layer (20)	showy aster heart-leaved arnica pine grass mountain sweetcicely	5 5 20 < 5	one-sided wintergreen common western pipsissewa false Solomon's-seal Columbia lily	< 5 < 5 < 5 < 5
Moss, lichen and liverwort layer (7)			common moss cushion moss	5 < 5

CHARACTER SPECIES

Present	Absent
lodgepole pine Rocky Mountain Douglas-fir black blueberry Oregon boxwood showy aster heart-leaved arnica pine grass Columbia lily	ponderosa pine western chokecherry arrow-leaved balsamroot beardless bluebunch wheat grass

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: sandy loam to silt clay loam
Soil Association: TW, GN, HN, SH, GR, CN, MN
Moisture regime: submesic to mesic
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 750-1530 m
Slope: 0-55%
Aspect: 135-180°
Landscape position: upper slope to middle slope, shedding and normal

ECOLOGY

- high elevation seral lodgepole pine forests on dry cool aspects, succeeding to a Rocky Mountain Douglas-fir edaphic or climatic climax
- moisture deficiencies occur occasionally
- productivity limited by growing season length and early frosts

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to +100 mm
Growing Degree Days: 900-1300
Freeze Free Period: 80-100 days

Plate 9. (21) Rocky Mountain Douglas-fir - ponderosa pine - tall Oregon-grape - pine grass vegetation type

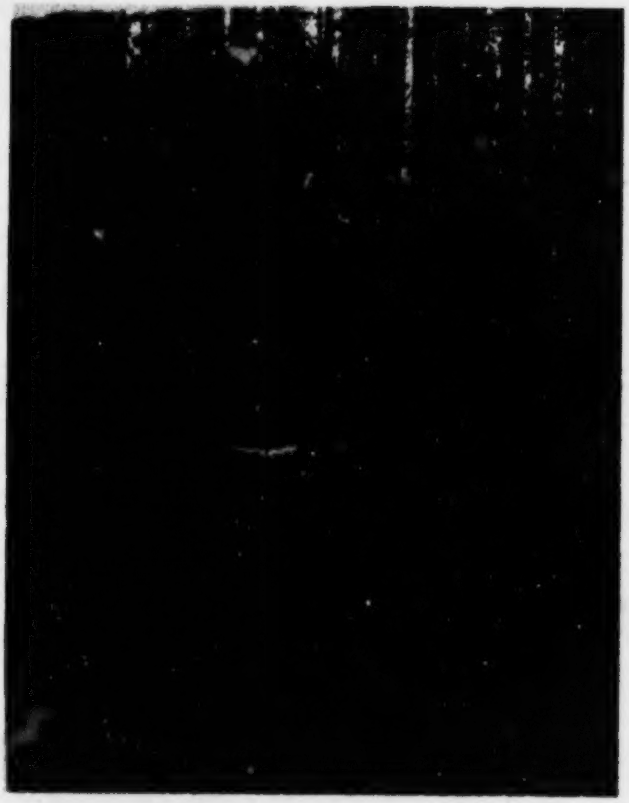


Plate 10. (25) Lodgepole pine - Oregon boxwood - showy aster - heart-leaved arnica vegetation type

009-26 **Rocky Mountain Douglas-fir – common paper birch – birch-leaved spirea – large-leaved rattlesnake orchid**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: dense mixed forest

Zone: Interior western red cedar
Subzone: ponderosa pine - Rocky Mountain Douglas-fir and Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	common paper birch	varies	Rocky Mountain Douglas-fir lodgepole pine	varies varies
Tall shrub layer (15)	willows	5	Rocky Mountain Douglas-fir Rocky Mountain maple	varies varies
Low shrub layer (40)	birch-leaved spirea tall Oregon-grape Oregon boxwood	10 5 varies	Rocky Mountain Douglas-fir roses willows common saskatoon	< 5 5 < 5 < 5
Herb layer (20)	large-leaved rattlesnake orchid	< 5	pine grass heart-leaved arnica American vetch showy aster	5 < 5 < 5 < 5
Moss, lichen and liverwort layer (< 5)	unidentified mosses	< 5		

CHARACTER SPECIES

Present		Absent
willows	heart-leaved arnica	alpine fir
birch-leaved spirea	American vetch	Engelmann spruce
tall Oregon-grape		white-flowered rhododendron
Oregon boxwood		Sitka valerian
large-leaved rattlesnake orchid		green false hellebore
pine grass		

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and morainal blankets
Soil Texture: sand to sandy loam
Soil Association: GH, SH
Moisture regime: submesic to mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 390-580 m
Slope: 0-16%
Aspect: 180-225°
Landscape position: upper slope to valley floor, shedding and normal

ECOLOGY

- mixed seral forests of common paper birch, lodgepole pine and Rocky Mountain Douglas-fir will proceed towards an edaphic climax of Rocky Mountain Douglas-fir
- coarse-textured soils and south aspects are limiting the amount of shrub and herb cover in this type
- moisture deficiencies and poor nutrient availability

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to -100 mm
Growing Degree Days: 1700-1900
Freeze Free Period: 120-140 days

009-28 Rocky Mountain Douglas-fir – tall Oregon-grape – pine grass – mountain sweetcicely

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: young seral
Stand appearance: dense mixed forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: lodgepole pine and Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	Rocky Mountain Douglas-fir common paper birch	varies varies	lodgepole pine	varies
Tall shrub layer (30)	Rocky Mountain Douglas-fir common saskatoon common paper birch	varies 5 10	Rocky Mountain maple California filbert willows	5 varies 5
Low shrub layer (40)	birch-leaved spirea tall Oregon-grape common snowberry common saskatoon	10 7 < 5 5	Rocky Mountain Douglas-fir roses western thimbleberry Oregon boxwood California filbert	< 5 7 5 10 < 5
Herb layer (30)	pine grass showy aster mountain sweetcicely	10 5 5	rough-fruited fairybells strawberries blue wild rye grass bedstraws	5 5 < 5 < 5
Moss, lichen and liverwort layer (5)	unidentified mosses	5		

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir	common snowberry	alpine fir
California filbert	pine grass	Engelmann spruce
common saskatoon	showy aster	white-flowered rhododendron
birch-leaved spirea	mountain sweetcicely	Sitka valerian
western thimbleberry	rough-fruited fairybells	green false hellebore
tall Oregon-grape		

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal blankets, colluvial veneers over rock
Soil Texture: sandy loam to clay loam
Soil Association: AG, TW, MN, SH, TR, G
Moisture regime: mesic to subhygric
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 420-963 m
Slope: 0-65%
Aspect: 135-270°
Landscape position: middle slope to lower slope, shedding, normal and receiving

ECOLOGY

- highly variable young seral sites that will succeed to an edaphic or climatic climax of Rocky Mountain Douglas-fir
- transitional between the Dry Interior and Interior Wet Belt, this type has favourable precipitation and heat for plant growth

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to -100 mm
Growing Degree Days: 1300-1700
Freeze Free Period: 100-140 days

Plate 11. (26) Rocky Mountain Douglas-fir - common paper birch - birch-leaved spirea - large-leaved rattlesnake orchid vegetation type

Plate 12. (28) Rocky Mountain Douglas-fir - tall Oregon-grape - pine grass - mountain sweetcicely vegetation type

009-23 Lodgepole pine – soopolallie – pine grass – showy aster

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: lodgepole pine and Rocky Mountain Douglas-fir. - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	lodgepole pine	40	Rocky Mountain Douglas-fir western larch	varies varies
Tall shrub layer (10)			Rocky Mountain Douglas-fir Rocky Mountain maple common paper birch soopolallie	5 < 5 5 < 5
Low shrub layer (50)	soopolallie roses tall Oregon-grape Oregon boxwood	15 7 5 20	Rocky Mountain Douglas-fir common saskatoon Rocky Mountain maple	< 5 < 5 < 5
Herb layer (35)	pine grass showy aster common western pipsissewa	30 5 5	false Solomon's-seal spreading dogbane	< 5 < 5
Moss, lichen and liverwort layer (7)	common moss	5	green-stemmed pipecleaner cushion moss	< 5 < 5

CHARACTER SPECIES

Present		Absent
lodgepole pine soopolallie roses tall Oregon-grape Oregon boxwood pine grass	showy aster	alpine fir Engelmann spruce white-flowered rhododendron Sitka valerian

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal and colluvial blankets
Soil Texture: sandy loam to silt loam
Soil Association: CPA, MN, TW, TR
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 720-1080 m
Slope: 5-31%
Aspect: all aspects
Landscape position: middle slope, shedding and normal

ECOLOGY

- lodgepole pine forests seral to Rocky Mountain Douglas-fir climax on coarse-textured soils
- moisture deficiencies limit productivity, as do nutrient deficiencies near soil surface

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to 0 mm
Growing Degree Days: 1300->1700
Freeze Free Period: 80-120 days

009-24 Rocky Mountain Douglas-fir – roses – pine grass – white-flowered hawkweed

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral
Stand appearance: open coniferous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: lodgepole pine and Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	Rocky Mountain Douglas-fir	30	lodgepole pine	varies
Tall shrub layer (15)	Rocky Mountain Douglas-fir	10	Rocky Mountain maple trembling aspen western red cedar	< 5 < 5 < 5
Low shrub layer (30)	roses birch-leaved spirea Oregon boxwood Rocky Mountain Douglas-fir	7 10 5 < 5	tall Oregon-grape Utah honeysuckle	5 < 5
Herb layer (65)	pine grass showy aster common western pipsissewa white-flowered hawkweed	50 5 5 5	racemose pussytoes northern twinflower large-leaved rattlesnake orchid	5 < 5 < 5
Moss, lichen and liverwort layer (5)	cushion moss	< 5	common moss	< 5

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir roses Utah honeysuckle birch-leaved spirea pine grass showy aster	white-flowered hawkweed racemose pussytoes	alpine fir Engelmann spruce western hemlock devil's-club common lady fern

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets, colluvial veneers over rock
Soil Texture: silt loam to clay loam
Soil Association: HN, MN, TW, VN
Moisture regime: submesic to mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 780-1380 m
Slope: 25-49%
Aspect: 135-270°
Landscape position: middle slope, shedding

ECOLOGY

- seral forests, lodgepole pine and Rocky Mountain Douglas-fir leading to an edaphic or climatic climax of Rocky Mountain Douglas-fir with an understory of pine grass
- steep shedding slopes and warm-dry aspects
- transition to Interior Wet Belt, with more precipitation than Dry Interior

CLIMATE

Climatic Moisture Deficit/Surplus: -100 to 0 mm
Growing Degree Days: 1100-1500
Freeze Free Period: 80-120 days

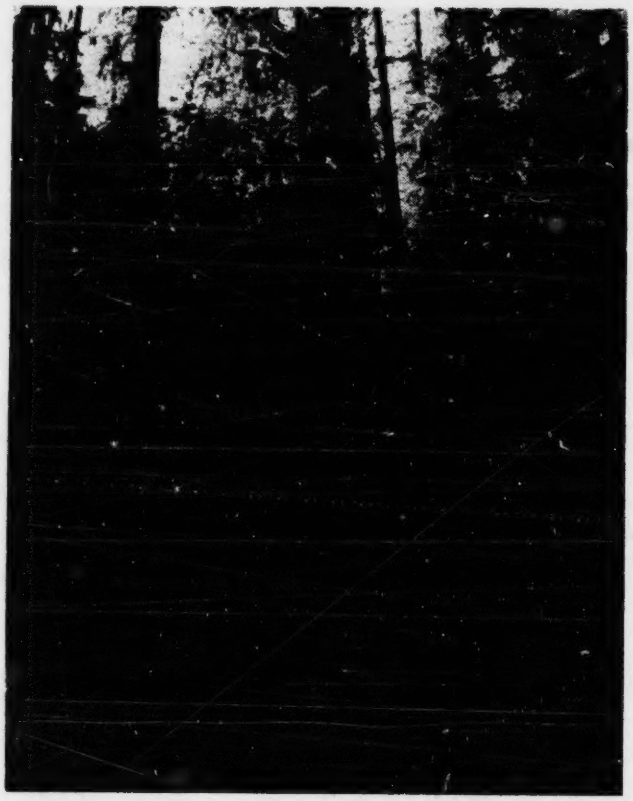


Plate 13. (23) Lodgepole pine - soopolallie - pine grass - showy aster vegetation type

Plate 14. (24) Rocky Mountain Douglas-fir - roses - pine grass - white-flowered hawkweed vegetation type

009-22 Rocky Mountain Douglas-fir – birch-leaved spirea – pine grass – showy aster

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing edaphic & climatic climax
Stand appearance: open to dense coniferous forests
Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: lodgepole pine and Rocky Mountain Douglas-fir -western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	Rocky Mountain Douglas-fir	50		
Tall shrub layer (10)	Rocky Mountain Douglas-fir	5	Rocky Mountain maple willows	5 5
Low shrub layer (30)	birch-leaved spirea Oregon boxwood	10 5	Rocky Mountain Douglas-fir willows roses	< 5 < 5 7
Herb layer (60)	pine grass showy aster	60 5	large-leaved rattlesnake orchid strawberries racemose pussytoes	< 5 < 5 5
Moss, lichen and liverwort layer (5)			common moss green-stemmed pipecleaner	5 < 5

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir birch-leaved spirea Oregon boxwood pine grass showy aster	alpine fir Engelmann spruce white-flowered rhododendron bracted lousewort luetkia

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal and colluvial blankets
Soil Texture: silt loam to clay loam
Soil Association: TW, CM, CPA, MT, MN
Moisture regime: subxeric to mesic
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 960-1200 m
Slope: 31-70%
Aspect: 135-315°
Landscape position: midslope, shedding

ECOLOGY

- climax forests of Rocky Mountain Douglas-fir with pine grass understory
- surface drought and soil creep may retard revegetation
- moderate moisture deficits and short and cool growing periods limit productivity

CLIMATE

Climatic Moisture Deficit/Surplus: -100 to 0 mm
Growing Degree Days: 900-1300
Freeze Free Period: 80-100 days

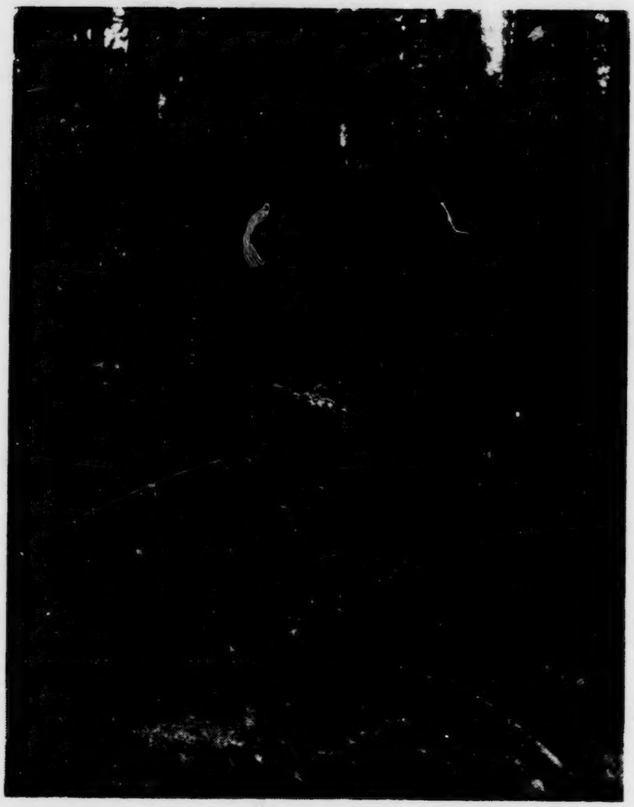


Plate 15. (22) Rocky Mountain Douglas-fir - birch-leaved spirea - pine grass - showy aster vegetation type

009-30 Rocky Mountain Douglas-fir – soopolallie – Oregon boxwood – common western pipsissewa

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Interior western red cedar and Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (70)	Rocky Mountain Douglas-fir	50	lodgepole pine western red cedar alpine fir	varies 15 varies
Tall shrub layer (30)	Rocky Mountain Douglas-fir	15	western red cedar common paper birch	20 10
Low shrub layer (50)	Oregon boxwood western red cedar	10 20	soopolallie Rocky Mountain Douglas-fir tall Oregon-grape birch-leaved spirea	5 varies 7 10
Herb layer (15)	common western pipsissewa large-leaved rattlesnake orchid	7 < 5	one-sided wintergreen rough-fruited fairybells northern twinflower	< 5 < 5 < 5
Moss, lichen and liverwort layer (5)			common moss cushion moss	< 5 < 5

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir western red cedar soopolallie Oregon boxwood common western pipsissewa large-leaved rattlesnake orchid rough-fruited fairybells	devil's-club white-flowered rhododendron bracted lousewort luetkia

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: sandy loam to silt loam
Soil Association: HN, SH, SAA, MN
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 750-1380 m
Slope: 10-31%
Aspect: all aspects
Landscape position: middle slope, shedding and normal

ECOLOGY

- closed stands of Rocky Mountain Douglas-fir on moderate slopes usually with moderately dense shrub layers and few herbs
- marginal surface moisture will result in slow succession to western red cedar climax
- shrub density may inhibit tree establishment and growth of herbs

CLIMATE

- cool and moist summers
- moderate to high snowpacks which remain until late spring

009-33 Western red cedar – western thimbleberry – birch-leaved spirea – large-leaved rattlesnake orchid

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest
Zone: Interior western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	Rocky Mountain Douglas-fir western red cedar common paper birch	20 20 5	white spruce lodgepole pine	5 5
Tall shrub layer (45)	western red cedar	40	Rocky Mountain maple Rocky Mountain Douglas-fir willows common paper birch	5 10 5 5
Low shrub layer (40)	western thimbleberry Oregon boxwood Rocky Mountain maple birch-leaved spirea	10 10 < 5 10	western red cedar common snowberry tall Oregon-grape	10 10 7
Herb layer (15)	large-leaved rattlesnake orchid	< 5	rough-fruited fairybells showy aster northern twinflower blue-bead clintonia	< 5 < 5 < 5 < 5
Moss, lichen and liverwort layer (5)	unidentified mosses	5		

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir western red cedar common paper birch birch-leaved spirea western thimbleberry Oregon boxwood Rocky Mountain maple large-leaved rattlesnake orchid rough-fruited fairybells showy aster	alpine fir Engelmann spruce white-flowered rhododendron bracted lousewort luetkia

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: HN, TW
Moisture regime: submesic to mesic
Drainage: well drained to rapidly drained

TOPOGRAPHY

Elevation: 690-1230 m
Slope: 19-70%
Aspect: 315-45°
Landscape position: middle slope, shedding

ECOLOGY

-very steep slopes, well-drained sites
-western red cedar often forms a dense shrub layer thus limiting any significant herb growth (phytotoxicity and light availability)
-nutrients deficient in upper part of soils

CLIMATE

-very cool and moist summers, topoclimate cold and moist as a result of aspect and elevation
-moderate to high snowpack which remains until late spring

009-32 Common paper birch – western red cedar – Rocky Mountain maple – rough-fruited fairybells

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: maturing seral
Stand appearance: dense mixed forest

Zone: Interior western red cedar and Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	Rocky Mountain Douglas-fir common paper birch	30 30		
Tall shrub layer (20)	western red cedar	20	common paper birch western hemlock western yew	< 5 < 5 < 5
Low shrub layer (20)	western red cedar Oregon boxwood Rocky Mountain maple baldhip rose	< 5 10 < 5 5	Rocky Mountain Douglas-fir western white pine birch-leaved spirea Utah honeysuckle	< 5 < 5 5 < 5
Herb layer (25)	rough-fruited fairybells common western pipsissewa northern twinlower	10 7 5	large-leaved rattlesnake orchid one-sided wintergreen blue-bead clintonia false Solomon's-seal	< 5 5 < 5 < 5
Moss, lichen and liverwort layer (variable)			common moss cushion moss	varies < 5

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir common paper birch western red cedar Utah honeysuckle Oregon boxwood Rocky Mountain maple rough-fruited fairybells common western pipsissewa false Solomon's-seal	alpine fir Engelmann spruce white-flowered rhododendron arrow-leaved balsamroot bracted lousewort

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: silt loam to clay loam
Soil Association: SH, MT. TW
Moisture regime: mesic
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 540-990 m
Slope: 16-34%
Aspect: 270-90°
Landscape position: midslope, shedding and normal

ECOLOGY

- steep slopes with good moisture availability, are variable depending on elevation
- lower elevation sites are warmer with Rocky Mountain maple, Utah honeysuckle, rough-fruited fairybells and false Solomon's-seal

CLIMATE

- cool shaded aspects, topoclimate warm and moist
- moderate snowpacks not melting until late spring

009-36 Common paper birch – willows – Oregon boxwood – blue-bead clintonia

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: dense mixed forest

Zone: Interior western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	common paper birch	40	Rocky Mountain Douglas-fir	30
Tall shrub layer (40)	Rocky Mountain Douglas-fir willows common paper birch	15 10 5	western red cedar	10
Low shrub layer (70)	western red cedar white spruce Oregon boxwood Rocky Mountain Douglas-fir	15 < 5 40 5	birch-leaved spirea western thimbleberry tall Oregon-grape	< 5
Herb layer (20)	blue-bead clintonia rough-fruited fairybells large-leaved rattlesnake orchid	5 < 5 < 5	one-sided wintergreen common western pipsissewa	< 5 < 5
Moss, lichen and liverwort layer (< 5)	unidentified mosses	< 5		

CHARACTER SPECIES

Present		Absent
common paper birch	one-sided wintergreen	ponderosa pine
Rocky Mountain Douglas-fir		western chokecherry
western red cedar		common juniper
western thimbleberry		arrow-leaved balsamroot
blue-bead clintonia		beardless bluebunch wheat grass
rough-fruited fairybells		

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: silt loam to silty clay loam
Soil Association: MT, HN
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 970-1020 m
Slope: 16-31%
Aspect: 45-90°
Landscape position: midslope, shedding and receiving

ECOLOGY

- closed common paper birch stands often with shrubs of western red cedar and Oregon boxwood on north aspects
- cool shaded slopes in the Interior Wet Belt Region
- western red cedar and Oregon boxwood form a thick low shrub layer limiting the amount of herb growth

CLIMATE

Climatic Moisture Deficit/Surplus: -100 to +100 mm
Growing Degree Days: 1300-1500
Freeze Free Period: 80-120 days

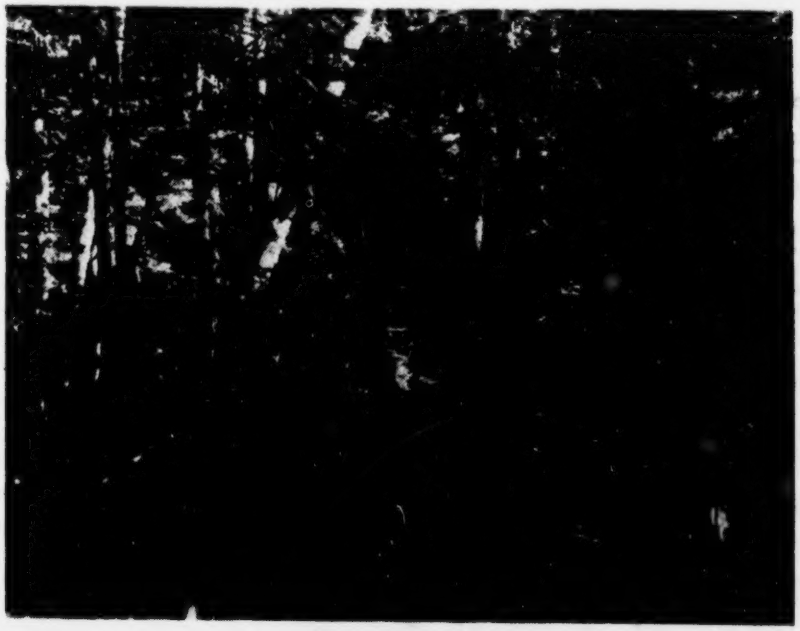


Plate 16. (32) Common paper birch - western red cedar - Rocky Mountain maple - rough-fruited fairybells vegetation type

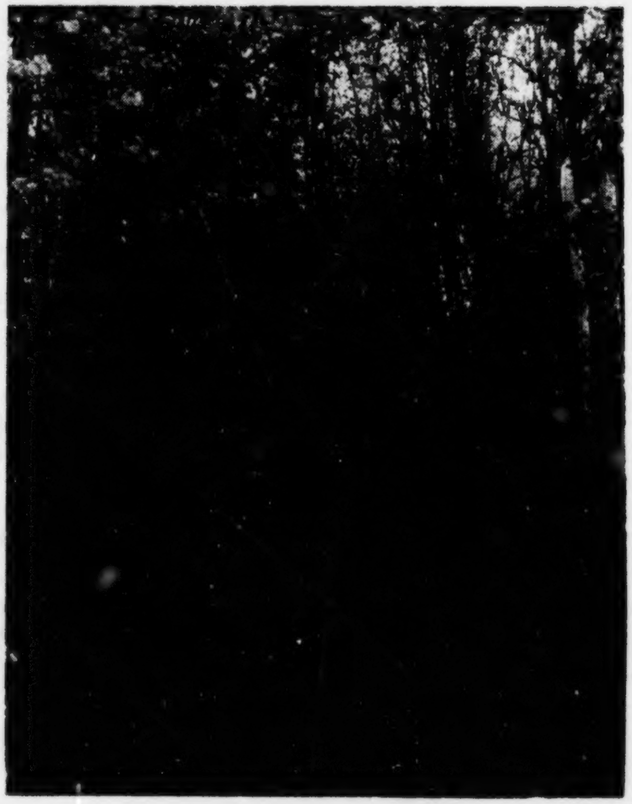


Plate 17. (36) Common paper birch - willows - Oregon boxwood - blue-bead clintonia vegetation type

009-19 Lodgepole pine – common juniper – pine grass – kinnikinnick

VEGETATION CHARACTERISTICS

Region: Dry Interior
Section: Vernon and Salmon Arm
Successional stage: young seral and maturing seral
Stand appearance: open coniferous forest

Zone: Interior Rocky Mountain Douglas-fir and Interior western red cedar
Subzone: lodgepole pine and Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	lodgepole pine	30	Rocky Mountain Douglas-fir	varies
Tall shrub layer (10)			Rocky Mountain Douglas-fir alders willows	7 varies < 5
Low shrub layer (30)	Rocky Mountain Douglas-fir common juniper birch-leaved spirea Oregon boxwood	< 5 < 5 5 5	soopolallie black blueberry roses	5 5 < 5
Herb layer (75)	pine grass kinnikinnick	70 5	white-flowered hawkweed grouseberry racemose pussytoes northern twinflower	< 5 varies 5 < 5
Moss, lichen and liverwort layer (variable)			hairy cap mosses	< 5

CHARACTER SPECIES

Present		Absent
lodgepole pine	kinnikinnick	ponderosa pine
Rocky Mountain Douglas-fir	grouseberry	white-flowered rhododendron
common juniper		red baneberry
Oregon boxwood		common lady fern
birch-leaved spirea		oak fern
pine grass		

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: silt loam to clay loam
Soil Association: CM, TW
Moisture regime: xeric to mesic
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 1080-1470 m
Slope: 0-60%
Aspect: 180-270°
Landscape position: upper slope and middle slope, shedding

ECOLOGY

- high elevation warm-dry slopes with lodgepole pine forest and pine grass understory
- seral to climatic or edaphic climax of Rocky Mountain Douglas-fir
- succession slow due to low moisture availability and high soil surface temperatures

CLIMATE

Climatic Moisture Deficit/Surplus: -200 to 0 mm
Growing Degree Days: 900-1100
Freeze Free Period: 60-100 days

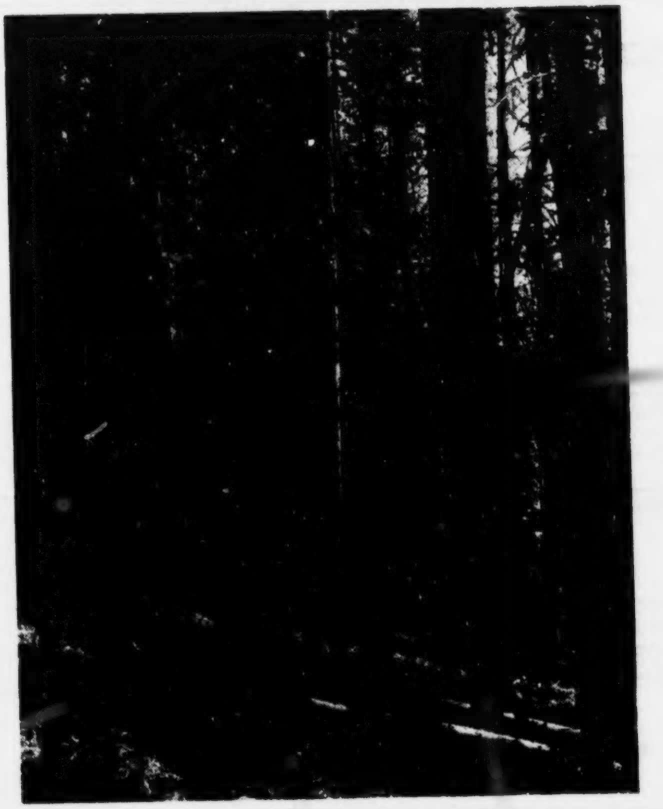


Plate 18. (19) Lodgepole pine - common juniper - pine grass - kinnikinnick vegetation type

009 **SR 73180**

VEGETATION CHARACTERISTICS

Region: Dry Interior
Section: Vernon Section
Successional stage: pioneer seral
Stand appearance: steppe

Zone: Subalpine Engelmann spruce - alpine fir

Subzone: Rocky Mountain Douglas-fir - lodgepole pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer	no shrubs			
Low shrub layer (7)	roses common saskatoon common juniper	5 < 5 < 5		
Herb layer (75)	beardless bluebunch wheat grass blue grasses common selaginella penstemons	40 10 7 7		
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present

- roses
- common saskatoon
- common juniper
- beardless bluebunch wheat grass
- blue grasses
- common selaginella
- penstemons

Absent

- ponderosa pine
- red-osier dogwood
- American skunk cabbage
- common lady fern
- oak fern

TERRAIN AND SOILS

Terrain: colluvial veneer over rock
Soil Texture: silt loam
Soil Association: CM
Moisture regime: xeric
Drainage: rapidly drained

TOPOGRAPHY

Elevation: 1570 m
Slope: 60%
Aspect: 180°
Landscape position: upper slope, shedding

ECOLOGY

-intense fire history on a steep south-facing slope has led to a grass-dominated vegetative cover
-vegetation will probably remain the same

CLIMATE

Climatic Moisture Deficit/Surplus: +100 mm
Growing Degree Days: < 700
Freeze Free Period: < 60 days

009-44 **Western thimbleberry – fireweed – oak fern**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: young seral
Stand appearance: recently logged

Zone: Interior western hemlock - western red cedar

Subzone: Rocky Mountain Douglas-fir and lodgepole pine - Engelman spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer (< 5)			western hemlock	< 5
			western red cedar	< 5
			Rocky Mountain maple	< 5
Low shrub layer (20)	western thimbleberry	10	Rocky Mountain maple	< 5
	American red elder	5		
	American red raspberry	10		
Herb layer (85)	fireweed	75	cucumberroot twistedstalk	< 5
	oak fern	5	sedges	< 5
	unifoliate-leaved foamflower	5	violets	< 5
	Canadian bunchberry	< 5	horsetails	< 5
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present	Absent
western thimbleberry American red elder American red raspberry fireweed oak fern unifoliate-leaved foamflower Canadian bunchberry	ponderosa pine western chokecherry arrow-leaved balsamroot beardless bluebunch wheat grass

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and morainal blankets
Soil Texture: sand to silt loam
Soil Association: STA, MT, WP
Moisture regime: subhygric to hydric
Drainage: well drained to poorly drained

TOPOGRAPHY

Elevation: 870-1350 m
Slope: 0-21%
Aspect: all aspects
Landscape position: lower slope and middle slope, receiving and normal

ECOLOGY

- these recently logged sites have no trees and very little coniferous regeneration; shrubs and herbs are dominant
- fireweed dominates, and will not disappear until the shrub or tree layers shade it out
- rich moist sites of high productivity

CLIMATE

- cool, moist to wet summers
- high snowpacks, enduring until late spring

009-34 **Trembling aspen – fireweed – Canadian bunchberry**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: young seral
Stand appearance: recently logged

Zone: Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer (variable)			trembling aspen willows	varies varies
Low shrub layer (30)	trembling aspen willows Oregon boxwood American red raspberry	10 10 7 7	western thimbleberry Rocky Mountain Douglas-fir	5 < 5
Herb layer (40)	fireweed Canadian bunchberry white-flowered hawkweed	30 5 5	Columbia lily western fescue pearly everlasting common dandelion	< 5 < 5 < 5 < 5
Moss, lichen and liverwort layer (variable)	unidentified mosses	varies		

CHARACTER SPECIES

Present	Absent
trembling aspen willows Oregon boxwood American red raspberry fireweed Canadian bunchberry Columbia lily western fescue pearly everlasting	alpine fir oceanspray common lady fern arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: HN, SH
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 600-1120 m
Slope: 0-31%
Aspect: 135-180°
Landscape position: lower slope and valley floor, normal

ECOLOGY

- very open sites without trees, and with sparse shrubs; dominant plants are disturbance species
- typical dry-warm sites after logging and burning, dominated by disturbance species
- sites may be slow to regenerate coniferous trees because of high surface temperatures

CLIMATE

- dry, warm summers
- moderate to high snowpacks, subject to early melting

Plate 19. (34) Trembling aspen - fireweed - Canadian bunchberry vegetation type

009-11 Lodgepole pine – alpine fir – black blueberry – blue-bead clintonia

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon, Salmon Arm and Trout Lake
Successional stage: young seral and maturing seral
Stand appearance: dense coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir

Subzone: Rocky Mountain Douglas-fir - lodgepole pine and lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	lodgepole pine	30	alpine fir Engelmann spruce	varies varies
Tall shrub layer (20)	alpine fir	10	Engelmann spruce alders	7 varies
Low shrub layer (50)	alpine fir black blueberry Oregon boxwood western thimbleberry	5 10 varies 5	Engelmann spruce alders birch-leaved spirea Utah honeysuckle	< 5 < 5 5 5
Herb layer (30)	blue-bead clintonia one-sided wintergreen western meadowrue	10 5 5	white-flowered hawkweed mountain sweetcicely Canadian bunchberry unifoliate-leaved foamflower	< 5 < 5 5 < 5
Moss, lichen and liverwort layer (5)			cushion moss common moss	< 5 < 5

CHARACTER SPECIES

Present	Absent
lodgepole pine alpine fir alders black blueberry Oregon boxwood western thimbleberry blue-bead clintonia one-sided wintergreen mountain sweetcicely	ponderosa pine western chokecherry arrow-leaved balsamroot beardless bluebunch wheat grass

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: sandy loam to silt loam
Soil Association: SAA, GR, CS, WI, SU, KF, KX, SR
Moisture regime: mesic to subhygric
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 1200-1680 m
Slope: 0-31%
Aspect: 135-315°
Landscape position: middle slope and lower slope, normal and receiving

ECOLOGY

- dense lodgepole pine forests with diverse shrub and herb layers
- high elevation seral forests on dry slopes after fire disturbance
- moisture from up-slope and warm aspects result in lush shrub and herb layers

CLIMATE

Climatic Moisture Deficit/Surplus: -100 to >+100

009-12 Lodgepole pine – alpine fir – grouseberry – violets

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon and Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	lodgepole pine	50	alpine fir	varies
Tall shrub layer (10)	alpine fir Engelmann spruce	7 < 3		
Low shrub layer (15)	alpine fir Engelmann spruce black blueberry	< 5 < 5 5	Utah honeysuckle	< 5
Herb layer (50)	grouseberry one-sided wintergreen violets	40 < 5 < 5	northern twinflower Canadian bunchberry white-flowered hawkweed	5 5 < 5
Moss, lichen and liverwort layer (variable)			common moss green-stemmed pipecleaner feather moss	varies < 5 < 5

CHARACTER SPECIES

Present	Absent
lodgepole pine alpine fir Engelmann spruce grouseberry one-sided wintergreen Canadian bunchberry	ponderosa pine western chokecherry beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: silt loam to clay loam
Soil Association: WI, GR
Moisture regime: mesic to subhygric
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 1395-1665 m
Slope: 0-19%
Aspect: 180-360°
Landscape position: middle slope, shedding to normal

ECOLOGY

- dense forests of lodgepole pine with alpine fir regeneration
- soils low in organic matter because of fires
- low nutrient status and cool temperatures may retard tree establishment and limit productivty

CLIMATE

Climatic Moisture Deficit/Surplus: 0 to +100 mm
Growing Degree Days: <700-900
Freeze Free Period: 60-80 days

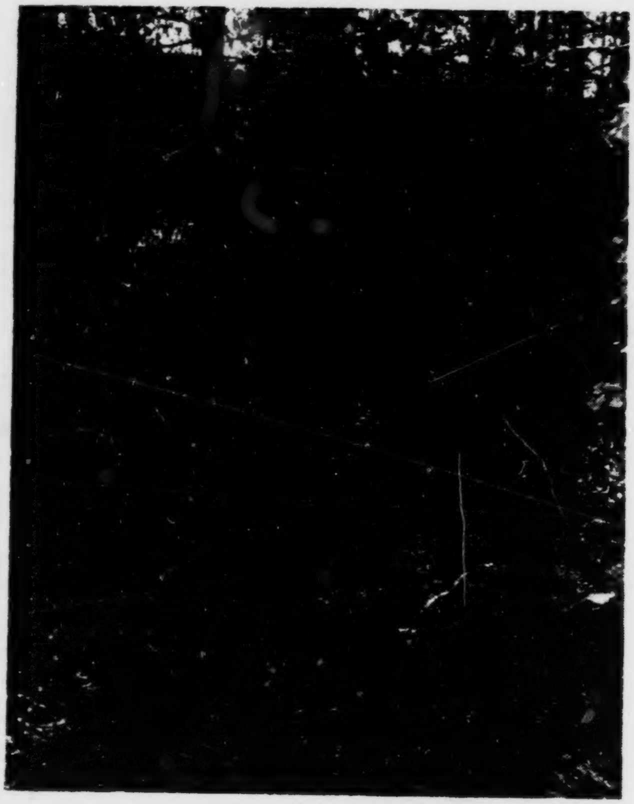


Plate 20. (11) Lodgepole pine - alpine fir - black blueberry - blue-bead clintonia vegetation type

Plate 21. (12) Lodgepole pine - alpine fir - grouseberry - violets vegetation type

009-14 Lodgepole pine – alpine fir – Oregon boxwood – one-sided wintergreen

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral
Stand appearance: open coniferous forest
Zone: Interior western hemlock - western red cedar
Subzone: lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	lodgepole pine Rocky Mountain Douglas-fir alpine fir western red cedar Engelmann spruce	varies varies varies varies 5		
Tall shrub layer (15)	alpine fir Engelmann spruce	5 < 5	western hemlock western red cedar western white pine	< 5 < 5 < 5
Low shrub layer (30)	alpine fir Oregon boxwood black blueberry	5 10 10	western hemlock western red cedar Engelmann spruce Sitka mountain-ash	< 5 < 5 < 5 < 5
Herb layer (20)	one-sided wintergreen northern twinflower large-leaved rattlesnake orchid	5 5 < 5	common western pipsissewa common pink pyrola violets blue-bead clintonia	< 5 < 5 < 5 < 5
Moss, lichen and liverwort layer (variable)	green-stemmed pipecleaner cushion moss	10 5	common moss	varies

CHARACTER SPECIES

Present		Absent
alpine fir lodgepole pine western hemlock Oregon boxwood black blueberry one-sided wintergreen	common pink pyrola violets	ponderosa pine western chokecherry beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: colluvial and morainal veneers over rock, colluvial and morainal blankets
Soil Texture: silt loam to clay loam
Soil Association: ST, CN, GR, AT, SN, YW
Moisture regime: mesic
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 1230-1500 m
Slope: 11-31%
Aspect: all aspects
Landscape position: middle slope, shedding

ECOLOGY

- open lodgepole pine or Rocky Mountain Douglas-fir forests on high elevation slopes
- slight moisture deficiencies may limit productivity
- surface drought may retard revegetation and establishment of Rocky Mountain Douglas-fir or lodgepole pine

CLIMATE

Climatic Moisture Deficit/Surplus: 0 to >+100 mm
Growing Degree Days: 900-1100
Freeze Free Period: 60-100 days

009-13 Rocky Mountain Douglas-fir - alpine fir - Oregon boxwood - Canadian bunchberry

VEGETATION CHARACTERISTICS

Region: Dry Interior
Section: Vernon
Successional stage: overmature seral
Stand appearance: dense coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: Rocky Mountain Douglas-fir - lodgepole pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (75)	Rocky Mountain Douglas-fir alpine fir Engelmann spruce	varies 30 25		
Tall shrub layer (60)	alpine fir	25	western red cedar Rocky Mountain Douglas-fir Engelmann spruce	varies varies
Low shrub layer (50)	alpine fir black blueberry Oregon boxwood	10 5 7	western red cedar Rocky Mountain Douglas-fir	varies varies
Herb layer (variable)	northern twinflower common western pipsissewa one-sided wintergreen	5 < 5 < 5	Canadian bunchberry five-leaved creeping raspberry	varies varies
Moss, lichen and liverwort layer (variable)	unidentified mosses	varies		

CHARACTER SPECIES

Present

- Rocky Mountain Douglas-fir
- alpine fir
- Engelmann spruce
- black blueberry
- Oregon boxwood
- northern twinflower
- one-sided wintergreen
- Canadian bunchberry

Absent

- ponderosa pine
- western chokecherry
- common juniper
- beardless bluebunch wheat grass
- arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: sandy loam
Soil Association: HN, KF
Moisture regime: mesic to subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1080-1200 m
Slope: 0-11%
Aspect: 135-180°
Landscape position: middle slope, receiving

ECOLOGY

- closed forests of alpine fir and Rocky Mountain Douglas-fir with a thick shrub layer
- cold air drainage and pooling may limit productivity
- these transitional sites may progress to a climax of alpine fir and Engelmann spruce or western red cedar
- duff is important for nutrient supply and soil moisture

CLIMATE

Climatic Moisture Deficit/Surplus: -100 to +100 mm
Growing Degree Days: 900-1100
Freeze Free Period: 60-100 days

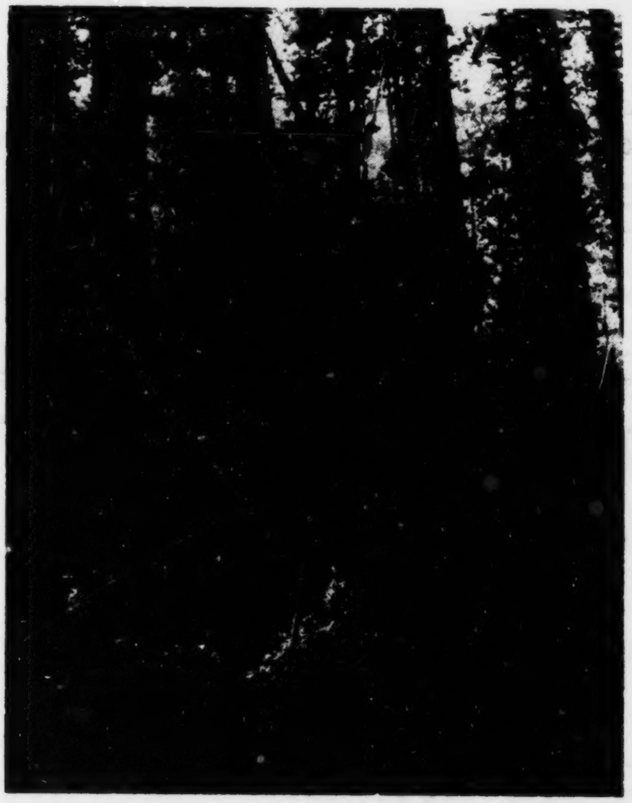


Plate 22. (14) Lodgepole pine - alpine fir - Oregon boxwood - one-sided wintergreen vegetation type

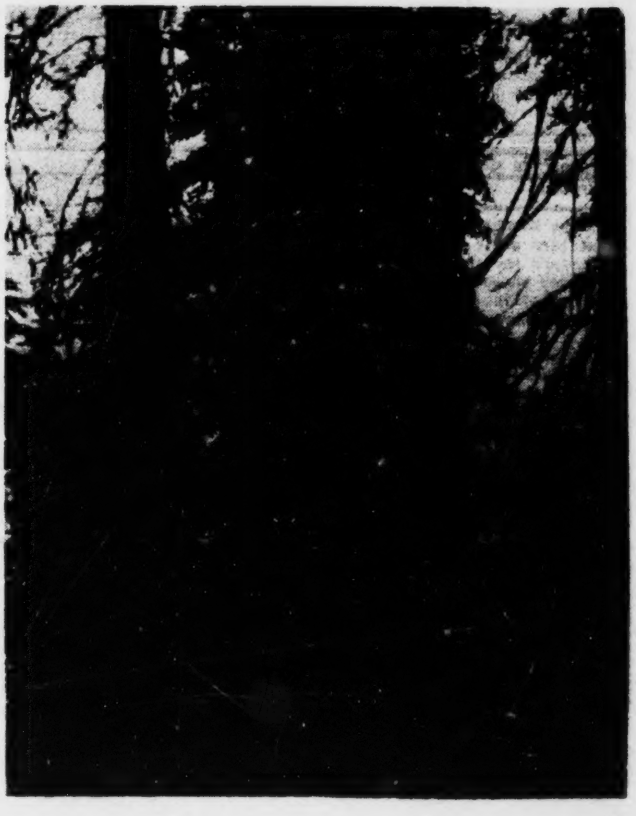


Plate 23. (13) Rocky Mountain Douglas-fir - alpine fir - Oregon boxwood - Canadian bunchberry vegetation type

009-40 Rocky Mountain Douglas-fir – western red cedar – Oregon boxwood – western bracken

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Trout Lake
Successional stage: maturing seral
Stand appearance: open coniferous forest

Zone: Interior western hemlock – western red cedar
Subzone: Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	Rocky Mountain Douglas-fir	30	western red cedar	< 5
	western white pine	10		
	common paper birch	5		
Tall shrub layer (20)	western red cedar	15		
	western hemlock	5		
	western white pine	< 5		
Low shrub layer (30)	Oregon boxwood	20	red huckleberry	< 5
	western red cedar	5	Rocky Mountain Doulgas-fir	< 5
	western hemlock	< 5	soopolallie	< 5
	Utah honeysuckle	< 5		
Herb layer (30)	western bracken	10	one-sided wintergreen	< 5
	common western pipsissewa	10	blue-bead clintonia	< 5
	northern twinflower	< 5		
Moss, lichen and liverwort layer (5)	common moss	5	step moss	< 5
	cushion moss	< 5		

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir	western bracken	alpine fir
western white pine	common western pipsissewa	ponderosa pine
western hemlock	one-sided wintergreen	common juniper
Oregon boxwood		white-flowered rhododendron
soopolallie		subalpine fleabane
Utah honeysuckle		

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and morainal blankets
Soil Texture: sandy loam
Soil Association: STA, WP
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 450-510 m
Slope: 25-40%
Aspect: 180-315°
Landscape position: upper slope to lower slope, normal and receiving

ECOLOGY

- open forests of Rocky Mountain Douglas-fir and western white pine on dry warm slopes
- slow to reach western hemlock climax because of moisture deficiencies and aspect
- well drained soils, deeply leached
- organic matter on forest floor supplies nutrients

CLIMATE

- warm and wet summers
- moderate snowpacks subject to early melting

009-37 Western larch – western red cedar – Oregon boxwood – common western pipsissewa

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: young seral
Stand appearance: open to dense coniferous forest
Zone: Interior western red cedar and Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	western larch Rocky Mountain Douglas-fir	5 15	western red cedar western white pine	varies varies
Tall shrub layer (30)	western red cedar Rocky Mountain maple	20 5		
Low shrub layer (variable)	western red cedar Oregon boxwood western thimbleberry	10 20 < 5	tall Oregon-grape birch-leaved spirea	5 < 5
Herb layer (10)	common western pipsissewa northern twinflower large-leaved rattlesnake orchid	< 5 < 5 < 5	western bracken rough-fruited fairybells	varies < 5
Moss, lichen and liverwort layer (5)	common moss red-stemmed pipecleaner	< 5 < 5		

CHARACTER SPECIES

Present		Absent
western larch	western bracken	alpine fir
Rocky Mountain Douglas-fir		Engelmann spruce
western red cedar		white-flowered rhododendron
tall Oregon-grape		bracted lousewort
Oregon boxwood		subalpine fleabane
common western pipsissewa		luetkia

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and morainal blankets
Soil Texture: sandy loam to silty clay loam
Soil Association: TW, KO
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 570-1020 m
Slope: 0-19%
Aspect: 270-315°
Landscape position: middle slope, shedding and normal

ECOLOGY

- mixed forests of Rocky Mountain Douglas-fir, western larch, western hemlock and western red cedar
- type of disturbance, regenerating species and intensity of disturbance all affect the vegetation composition
- soil moisture deficiencies may limit productivity and slow rate of succession

CLIMATE

- cool and moist to wet summers
- moderate to high snowpacks enduring until late spring

Plate 24. (40) Rocky Mountain Douglas-fir - western red cedar - Oregon boxwood - western bracken vegetation type

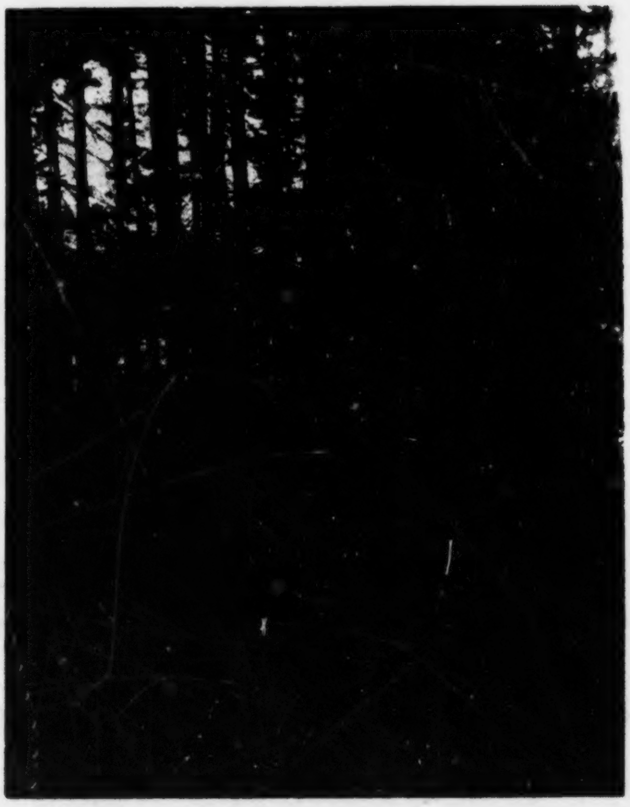


Plate 25. (37) Western larch - western red cedar - Oregon boxwood - common western pipsissewa vegetation type

009-35

Western larch – western red cedar – soopolallie – northern twinflower

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral
Stand appearance: open coniferous forest

Zone: Interior western red cedar and Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	Rocky Mountain Douglas-fir	10	common paper birch western larch	varies varies
Tall shrub layer (20)	Rocky Mountain Douglas-fir western red cedar	10 10	common paper birch	< 5
Low shrub layer (50)	soopolallie Oregon boxwood birch-leaved spirea Utah honeysuckle	varies 25 20 < 5	Rocky Mountain Douglas-fir tall Oregon-grape roses	< 5 < 5 < 5
Herb layer (30)	northern twinflower common western pipsissewa white-flowered hawkweed large-leaved rattlesnake orchid	10 5 < 5 < 5	western fescue kinnikinnick blue-bead clintonia	< 5 varies varies
Moss, lichen and liverwort layer (15)	common moss	10	cushion moss	varies

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir	northern twinflower	alpine fir
western larch	common western pipsessewa	Engelmann spruce
western red cedar	kinnikinnick	white-flowered rhododendron
soopolallie	western fescue	Sitka valerian
Oregon boxwood		luetkia
birch-leaved spirea		subalpine fleabane

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and colluvial veneers over rock
Soil Texture: sandy loam to silt loam
Soil Association: VN, SH, KO, CP
Moisture regime: mesic
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 660-1140 m
Slope: 11-50%
Aspect: 270°
Landscape position: upper slope and middle slope, shedding

ECOLOGY

- open Rocky Mountain Douglas-fir and lodgepole pine forests found on west-facing slopes
- aspect, slope and drainage all contribute to the dryness of this type
- succession will be slow initially, but will accelerate as trees provide shade

CLIMATE

- warm and moist summers
- moderate to high snowpacks which may melt early in the spring

009-41 Common paper birch – western red cedar – western thimbleberry – trailflower

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: open coniferous forest

Zone: Interior western red cedar

Subzone: Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (variable)	common paper birch	15	Rocky Mountain Douglas-fir western red cedar	varies varies
Tall shrub layer (variable)	western red cedar	varies	common paper birch Rocky Mountain Douglas-fir Rocky Mountain maple	5 varies < 5
Low shrub layer (25)	western thimbleberry roses Rocky Mountain maple	< 5 5 < 5	common saskatoon birch-leaved spirea Oregon boxwood western red cedar	< 5 5 varies < 5
Herb layer (25)	trailflower common western pipsissewa northern twinflower	< 5 5 < 5	western bracken showy aster rough-fruited fairybells wild sarsaparilla	varies varies varies varies
Moss, lichen and liverwort layer (< 5)			common moss cushion moss	< 5 < 5

CHARACTER SPECIES

Present

common paper birch
western red cedar
western thimbleberry
roses
trailflower
common western pipsissewa
western bracken
wild sarsaparilla
rough-fruited fairybells

Absent

alpine fir
Engelmann spruce
subalpine fleabane
luetkia
white globeflower

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: sandy loam to silty clay loam
Soil Association: MT, TR, VN, MN
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 420-990 m
Slope: 0-25%
Aspect: 135-270°
Landscape position: middle slope, normal and receiving

ECOLOGY

-usually open forests of common paper birch, western red cedar and Rocky Mountain Douglas-fir
-recently established following fire
-soils moderately acidic and deficient in nutrients in upper part

CLIMATE

-warm moist summers
-low to moderate snowpacks melting by early spring

Plate 26. (35) Western larch - western red cedar - soopolallie - northern twinflower vegetation type

Plate 27. (41) Common paper birch - western red cedar - western thimbleberry - trailflower vegetation type

009-39 Rocky Mountain Douglas-fir – western hemlock – black blueberry – rough-fruited fairybells

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Trout Lake
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar

Subzone: Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	Rocky Mountain Douglas-fir western red cedar western white pine	40 7 5	western hemlock	varies
Tall shrub layer (25)	western red cedar western hemlock Rocky Mountain maple	10 5 7		
Low shrub layer (variable)	western hemlock western red cedar black blueberry Rocky Mountain maple	< 5 < 5 7 < 5	Oregon boxwood roses Sitka mountain-ash	varies < 5 < 5
Herb layer (variable)	rough-fruited fairybells blue-bead clintonia common western pipsissewa wild sarsaparilla	varies 10 5 5	northern twinflower	5 5 < 5 < 5
Moss, lichen and liverwort layer (< 5)	green-stemmed pipecleaner	< 5		

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir western red cedar Rocky Mountain maple Oregon boxwood black blueberry rough-fruited fairybells blue-bead clintonia wild sarsaparilla	alpine fir Engelmann spruce subalpine fleabane luetkia western pasqueflower

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: silt loam
Soil Association: STA
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 960-1110 m
Slope: 40-60%
Aspect: 135°
Landscape position: middle slope, shedding

ECOLOGY

-moisture status is good
-soils mildly acidic with good nutrient content
-soil movement and warm dry aspects contribute to the sparseness of the vegetation

CLIMATE

-warm wet summers
-high snowpacks, not melting until late spring

Plate 28. (39) Rocky Mountain Douglas-fir - western hemlock - black blueberry - rough-fruited fairybells vegetation type

009-38 Rocky Mountain Douglas-fir – western hemlock – Oregon boxwood – northern twinflower

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral
Stand appearance: dense conferous forest

Zone: Interior western hemlock - western red cedar

Subzone: Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (70)	Rocky Mountain Douglas-fir western red cedar	30 30	western hemlock common paper birch western white pine	5 5 5
Tall shrub layer (variable)	western red cedar	35	western hemlock	varies
Low shrub layer (40)	western red cedar Oregon boxwood birch-leaved spirea	10 5 5	western hemlock common saskatoon Oregon wintergreen tall Oregon-grape	varies < 5 < 5 < 5
Herb layer (20)	northern twinflower common western pipsissewa blue-bead clintonia	10 5 < 5	one-sided wintergreen common pink pyrola Columbia lily	< 5 < 5 < 5
Moss, lichen and liverwort layer (5)	cushion moss common moss	5 < 5		

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir	common western pipsissewa	alpine fir
western red cedar	common pink pyrola	Engelmann spruce
Oregon boxwood	Columbia lily	subalpine fleabane
birch-leaved spirea		luetkia
Oregon wintergreen		western pasqueflower
northern twinflower		

TERRAIN AND SOILS

Terrain: fluvial fans, fluvioglacial terraces and morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: KX, SH, MT
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 530-690 m
Slope: 0-21%
Aspect: all aspects
Landscape position: middle slope, shedding and normal

ECOLOGY

-mixed seral stands, with dense regeneration of conifers
-the herb layer is often very sparse under thick shrub layers
-stands are around 70 years old, following fires

CLIMATE

-cool wet summers
-moderate snowpacks

009-29 Rocky Mountain Douglas-fir – western hemlock – Oregon boxwood – one-sided wintergreen

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (30)	Rocky Mountain Douglas-fir western hemlock western red cedar	30 10 20	western white pine common paper birch	0-20 7
Tall shrub layer (40)	western red cedar	35	western hemlock Rocky Mountain Douglas-fir	15 varies
Low shrub layer (50)	western red cedar Oregon boxwood	20-60 10	western hemlock tall Oregon-grape Rocky Mountain maple roses	5 < 5 < 5 < 5
Herb layer (10)	one-sided wintergreen large-leaved rattlesnake orchid common western pipsissewa	< 5 < 5 < 5	blue-bead clintonia false Solomon's-seal star-flowered false Solomon's-seal	< 5 < 5 < 5
Moss, lichen and liverwort layer (5)			common moss cushion moss	< 5 < 5

CHARACTER SPECIES

Present	Absent
Rocky Mountain Douglas-fir western hemlock western red cedar Rocky Mountain maple Oregon boxwood one-sided wintergreen common western pipsissewa false Solomon's-seal	alpine fir Engelmann spruce devil's-club Sitka valerian bracted lousewort

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal and colluvial blankets
Soil Texture: sand to sandy loam
Soil Association: SB, VN, HN, MT
Moisture regime: submesic
Drainage: rapidly drained to well drained

TOPOGRAPHY

Elevation: 720-1050 m
Slope: 16-60%
Aspect: 90-315°
Landscape position: middle slope, shedding

ECOLOGY

- slow to reach climax of western hemlock and western red cedar due to high surface temperatures and soil creep
- strong leaching and thin discontinuous moss layer results in low nutrient status of soils
- south to west aspects, steep slopes and coarse soils may result in moisture deficiencies

CLIMATE

- cool moist to wet summers
- moderate snowpacks, melting slowly in spring

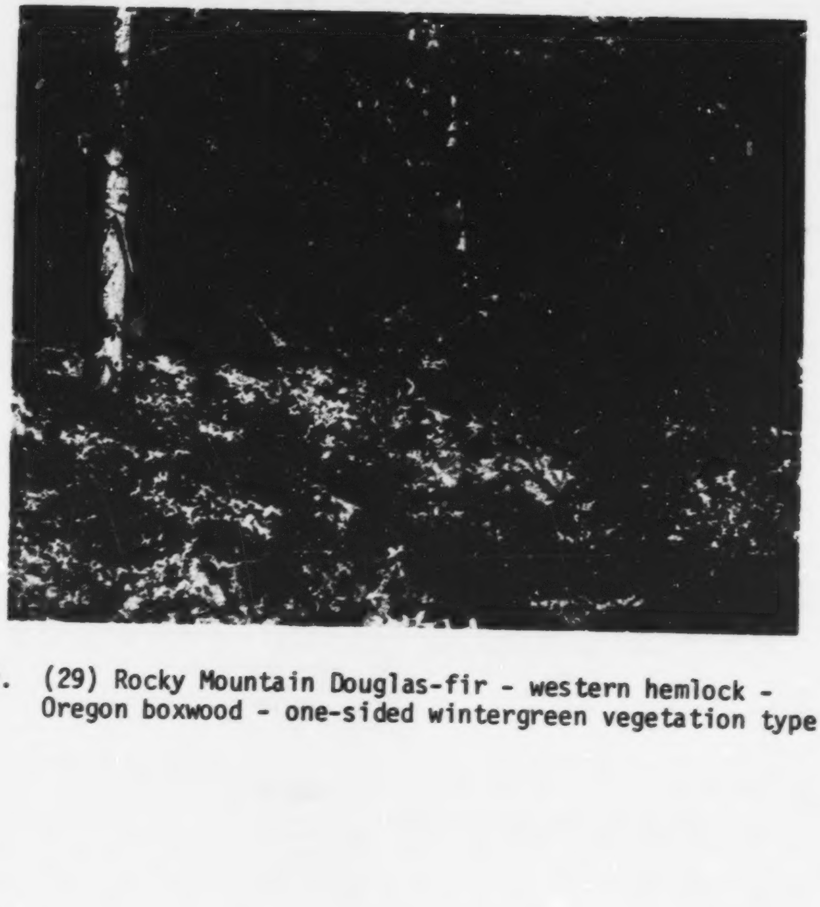


Plate 29. (29) Rocky Mountain Douglas-fir - western hemlock - Oregon boxwood - one-sided wintergreen vegetation type

009	**SR 73213**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: wetland

Zone: Interior western hemlock - western red cedar
Subzone: lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer	no shrubs			
Low shrub layer (5)	western red cedar Engelmann spruce common Labrador tea red-osier dogwood	< 5 < 5 < 5 < 5		
Herb layer (80)	rushes sedges round-leaved sundew	70 7 5		
Moss, lichen and liverwort layer (15)	sphagnums	15		

CHARACTER SPECIES

Present	Absent
western red cedar Engelmann spruce common Labrador tea rushes sedges sphagnums	Rocky Mountain Douglas-fir ponderosa pine arrow-leaved balsamroot oak fern northern twinflower

TERRAIN AND SOILS

Terrain: fluvial level
Soil Texture: silt loam
Soil Association: MT
Moisture regime: hydric
Drainage: poorly drained

TOPOGRAPHY

Elevation: 1180 m
Slope: 0-3%
Aspect: 90°
Landscape position: level, collecting

ECOLOGY

-high water table excludes many species of plants
-only plants adapting to wet conditions are successful

CLIMATE

-cool, moist summers
-moderate snowpacks, enduring until late spring

009-31 Rocky Mountain Douglas-fir – western hemlock – black blueberry – blue-bead clintonia

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and Rocky Mountain Douglas-fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (50)	Rocky Mountain Douglas-fir	30	western hemlock western red cedar western white pine	10 varies 5
Tall shrub layer (40)	western hemlock western red cedar	varies 10-40		
Low shrub layer (30)	western hemlock western red cedar black blueberry Oregon boxwood	7 10 < 5 7	Utah honeysuckle	< 5
Herb layer (15)	northern twinflower large-leaved rattlesnake orchid one-sided wintergreen	5 < 5 < 5	blue-bead clintonia common pink pyrola green pyrola	< 5 < 5 < 5
Moss, lichen and liverwort layer (variable)	cushion moss	5	common moss	varies

CHARACTER SPECIES

Present		Absent
Rocky Mountain Douglas-fir western hemlock western red cedar black blueberry Utah honeysuckle Oregon boxwood	northern twinflower one-sided wintergreen common pink pyrola	common juniper spreading dogbane luetkia Sitka valerian subalpine fleabane

TERRAIN AND SOILS

Terrain: fluvioglacial terraces and morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: HN, MT, KX, KO
Moisture regime: mesic to subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 720-1200 m
Slope: 0-19%
Aspect: 135-270°
Landscape position: middle slope, shedding and normal

ECOLOGY

- mixed closed forests of Rocky Mountain Douglas-fir, western hemlock, western red cedar and western white pine with sparse herbs
- fairly dry sites, influenced by south aspect usually on coarse material
- poor nutrient status and moisture availability

CLIMATE

Climatic Moisture Deficit/Surplus: -100 to +100 mm
Growing Degree Days: 1100-1500
Freeze Free Period: 100-120 days

Plate 30. (31) Rocky Mountain Douglas-fir - western hemlock - black blueberry - blue-bead clintonia vegetation type

009-01 Western hemlock – western red cedar – western yew – blue-bead clintonia

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing climatic climax
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar

Subzone: Rocky Mountain Douglas-fir - western larch

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (75)	western hemlock western red cedar	60 20	Rocky Mountain Douglas-fir western white pine	< 5 < 5
Tall shrub layer (25)	western hemlock western red cedar	20 7		
Low shrub layer (30)	western hemlock Oregon boxwood	10 7	western red cedar black blueberry western yew red huckleberry	5 < 5 < 5 < 5
Herb layer (40)	Canadian bunchberry blue-bead clintonia	10 10	northern twinflower large-leaved rattlesnake orchid	5 < 5
Moss, lichen and liverwort layer (60)	step moss common moss	varies 20	green-stemmed pipecleaner cushion moss	30 5

CHARACTER SPECIES

Present		Absent
western hemlock western red cedar western yew black blueberry red huckleberry blue-bead clintonia	Canadian bunchberry common moss	ponderosa pine western chokecherry common juniper beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: fluvioglacial terraces, morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: SH, CN, MT, STA, KO, KX, WP, HN
Moisture regime: subhygric to hygric
Drainage: well drained

TOPOGRAPHY

Elevation: 510-1240 m
Slope: 1-30%
Aspect: all aspects
Landscape position: variable slope position, shedding to receiving

ECOLOGY

- old-age western hemlock - western red cedar forests with thick moss layers
- soils are usually well-drained, well aerated, nutrient status low
- forests are often over-mature and stagnant

CLIMATE

- cool and moist to wet summers
- low snowpacks melting slowly in spring

009-02 Western hemlock – western red cedar – unifoliate-leaved foamflower – oak fern

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral to maturing climatic climax
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	western hemlock western red cedar	varies 20	Rocky Mountain Douglas-fir alpine fir	varies varies
Tall shrub layer (15)	western hemlock western red cedar	10-25 10	alpine fir	< 5
Low shrub layer (20)	western hemlock western red cedar black blueberry	7 5 25	western yew Oregon boxwood	< 5 varies
Herb layer (75)	oak fern unifoliate-leaved foamflower blue-bead clintonia	50 15 15	five-leaved creeping raspberry Canadian bunchberry large-leaved rattlesnake orchid one-sided wintergreen	varies varies 5 5
Moss, lichen and liverwort layer (variable)	green-stemmed pipecleaner	varies	cushion moss mniums	5 5

CHARACTER SPECIES

Present		Absent
western hemlock western red cedar black blueberry oak fern unifoliate-leaved foamflower blue-bead clintonia	rough-fruited fairybells	ponderosa pine western chokecherry common juniper beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: silt loam to silt clay loam
Soil Association: STA, SR, CA, HN
Moisture regime: subhygric to hygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1020-1460 m
Slope: 0-51%
Aspect: all aspects
Landscape position: middle slope to valley floor, normal and receiving

ECOLOGY

- mature to overmature western hemlock and western red cedar forest usually with rich, herb layer dominated by oak fern and unifoliate-leaved foamflower
- better than average nutrient and moisture status because of fine-textured soils

CLIMATE

Climatic Moisture Deficit/Surplus: 0 to +100 mm
Growing Degree Days: 1100-1300
Freeze Free Period: 80-100 days

Plate 31. (2) Western hemlock - western red cedar - unifoliate-leaved foamflower - oak fern vegetation type

009-03 Western hemlock - alpine fir - black blueberry - blue-bead clintonia

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral and overmature seral
Stand appearance: dense coniferous forest
Zone: Interior western hemlock - western red cedar
Subzone: lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (75)	western red cedar	20	western hemlock alpine fir Engelmann spruce	varies varies 15
Tall shrub layer (40)	western red cedar western hemlock	15 varies	alpine fir	varies
Low shrub layer (45)	western red cedar Oregon boxwood black blueberry	10 varies 15	western hemlock alpine fir Sitka mountain-ash	varies varies 5
Herb layer (40)	blue-bead clintonia unifoliate-leaved foamflower one-sided wintergreen	10-15 5 < 5	northern twinflower oak fern simple-stemmed twistedstalk	< 5 5 5
Moss, lichen and liverwort layer (15)	cushion moss	10	common moss green-stemmed pipecleaner	5 10

CHARACTER SPECIES

Present	Absent
western red cedar alpine fir white-flowered rhododendron black blueberry blue-bead clintonia unifoliate-leaved foamflower one-sided wintergreen simple-stemmed twistedstalk	ponderosa pine western chokecherry common juniper beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: sandy loam to silt loam
Soil Association: HN, SB, ST, STA, MT, CX, SH
Moisture regime: subhygric to hygric
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 1050-1395 m
Slope: 5-30%
Aspect: all aspects
Landscape position: middle slope, normal to receiving

ECOLOGY

-alpine fir, seral to western hemlock and western red cedar
-typical vegetation found at high elevations in Interior Wet Belt under the influence of cold-air drainage or pooling
-high precipitation results in leaching and Podzolic soils
-moss layer is important in nutrient cycling

CLIMATE

Climatic Moisture Deficit/Surplus: 0 to +100 mm
Growing Degree Days: 900-1300
Freeze Free Period: 60-100 days

009-04 Western hemlock – western red cedar –devil's–club – common lady fern

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: maturing seral to mature edaphic and climatic climax
Stand appearance: dense coniferous forest
Zone: Interior western hemlock - western red cedar
Subzone: Rocky Mountain Douglas-fir - western larch and lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (75)	western red cedar western hemlock	40 varies	alpine fir Engelmann spruce	varies varies
Tall shrub layer (15)	western red cedar western hemlock	5 varies	western yew	varies
Low shrub layer (variable)	western red cedar devil's club	5 varies	western hemlock black blueberry	varies < 5
Herb layer (70)	unifoliate-leaved foamflower oak fern blue-bead clintonia	10-50 20-30 7	false Solomon's-seal common lady fern bedstraws Canadian bunchberry	5 15 < 5 varies
Moss, lichen and liverwort layer (variable)			common moss mniums	varies varies

CHARACTER SPECIES

Present		Absent
western red cedar devil's-club western yew unifoliate-leaved foamflower oak fern blue-bead clintonia	common lady fern spiny shield fern	ponderosa pine western chokecherry common juniper beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: fluvial level, fluvioglacial terraces, morainal and colluvial blankets
Soil Texture: sand to silt clay loam
Soil Association: ST,MT,SN, SH,WP,SAA,STA,HN,AT,SK,CA,KO,KX,
Moisture regime: subhygric to subhydric [MO
Drainage: well drained to poorly drained

TOPOGRAPHY

Elevation: 390-1450 m
Slope: 0-31%
Aspect: all aspects
Landscape position: middle slope to valley floor, receiving and seepage

ECOLOGY

- a dense layer of devil's-club with common lady fern beneath is typical of this vegetation type, western red cedar may grow in pure stands in response to seepage
- soils may be gleyed and are usually heavily leached
- watertable may become high if tree cover is removed

CLIMATE

Climatic Moisture Deficit/Surplus: 0 to >+100 mm
Growing Degree Days: 900-1100
Freeze Free Period: 80-100 days

Plate 32. (3) Western hemlock - alpine fir - black blueberry - blue-bead clintonia vegetation type

Plate 33. (4) Western hemlock - western red cedar - devil's-club - common lady fern vegetation type

009 SR 73212

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: maturing seral
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar

Subzone: lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	Engelmann spruce western red cedar western hemlock alpine fir	35 20 7 7		
Tall shrub layer (40)	western red cedar western hemlock	25 10		
Low shrub layer (25)	western red cedar western hemlock Engelmann spruce oval-leaved blueberry	15 7 < 5 < 5		
Herb layer (75)	American skunk cabbage common lady fern western wild ginger Alaska rein-orchid	60 7 5 5		
Moss, lichen and liverwort layer (70)	sphagnums common moss mniums	25 35 10		

CHARACTER SPECIES

Present

western red cedar
western hemlock
American skunk cabbage
common lady fern
western wild ginger
sphagnums
common moss

Absent

Rocky Mountain Douglas-fir
ponderosa pine
beardless bluebunch wheat grass
arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: fluvial level
Soil Texture: silt loam
Soil Association: MT
Moisture regime: hydric
Drainage: poorly drained

TOPOGRAPHY

Elevation: 1125 m
Slope: 0-3%
Aspect: 45°
Landscape position: lower slope, seepage

ECOLOGY

-typical vegetation in high-elevation valley bottoms in the Interior Wet Belt
-nutrient-rich seepage water increases productivity

CLIMATE

-cool, moist summers
-moderate snowpacks, enduring until late spring

009	**SR 73188**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: dense coniferous forest

Zone: Interior western hemlock - western red cedar

Subzone: lodgepole pine - Engelmann spruce - alpine fir

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (85)	western red cedar Rocky Mountain Douglas-fir alpine fir	60 15 10		
Tall shrub layer (30)	western red cedar alpine fir willows	20 5 5		
Low shrub layer (< 5)	willows	< 5		
Herb layer (< 5)	large-leaved rattlesnake orchid	< 5		
Moss, lichen and liverwort layer (< 5)	mniums	< 5		

CHARACTER SPECIES

Present	Absent
western red cedar Rocky Mountain Douglas-fir alpine fir willows large-leaved rattlesnake orchid	ponderosa pine arrow-leaved balsamroot silky lupine Columbia gromwell

TERRAIN AND SOILS

Terrain: morainal blanket
Soil Texture: sandy loam
Soil Association: MT
Moisture regime: subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1300 m
Slope: 30%
Aspect: 315°
Landscape position: middle slope, normal

ECOLOGY

-sparse low shrubs, herbs and mosses under a dense tree and tall shrub canopy dominated by western red cedar
-productivity is a function of moisture availability

CLIMATE

-warm dry summer
-moderate snowpacks, melting early in spring

009-45 Black blueberry – Sitka valerian – green false hellebore

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm and Trout Lake
Successional stage: young seral
Stand appearance: recently logged
Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer (< 5)			alpine fir Engelmann spruce	< 5 < 5
Low shrub layer (10)	currants alpine fir Engelmann spruce	< 5 < 5 < 5	black blueberry white-flowered rhododendron	5 5
Herb layer (50)	Sitka valerian green false hellebore oak fern five-leaved creeping raspberry	35 5 5 < 5	cucumberroot twistedstalk bracted lousewort fireweed	5 < 5 < 5
Moss, lichen and liverwort layer (< 5)			cushion moss	< 5

CHARACTER SPECIES

Present

alpine fir
Engelmann spruce
currants
Sitka valerian
green false hellebore
oak fern
bracted lousewort
fireweed

Absent

ponderosa pine
Rocky Mountain Douglas-fir
western chokecherry
arrow-leaved balsamroot
beardless bluebunch wheat grass

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: SAA
Moisture regime: hygric to subhydric
Drainage: moderately well drained to imperfectly drained

TOPOGRAPHY

Elevation: 1395-1650 m
Slope: 5-20%
Aspect: 315-90°
Landscape position: middle slope, receiving seepage

ECOLOGY

- open shrubs and an often thick herb layer characterize these subalpine, recently logged and burnt sites
- moisture availability is good and may result in excess shrub production
- cold climate and deep snow may limit productivity
- may become parkland meadow complexes

CLIMATE

- cool moist summers
- high snow packs staying until late spring

009-07 Alpine fir – white-flowered rhododendron – black blueberry –Sitka valerian

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon, Salmon Arm and Trout Lake
Successional stage: maturing climatic climax
Stand appearance: open coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (30)	alpine fire Engelmann spruce	15-30 20-30		
Tall shrub layer (10)	alpine fir Engelmann spruce	10 < 5		
Low shrub layer (80)	black blueberry white-flowered rhododendron alpine fir Engelmann spruce	20 60 7 < 5	currants	5
Herb layer (60)	Sitka valerian unifoliate-leaved foamflower green false hellebore	30 5 5	broad-leaved arnica oak fern bracted lousewort western meadowrue	10 10 < 5 5
Moss, lichen and liverwort layer (10)			cushion moss	10

CHARACTER SPECIES

Present		Absent
alpine fir Engelmann spruce black blueberry white-flowered rhododendron Sitka valerian unifoliate-leaved foamflower	green false hellebore bracted lousewort western meadowrue	ponderosa pine common juniper arrow-leaved balsamroot spreading dogbane

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: sandy loam to clay loam
Soil Association: SAA, ST, KF
Moisture regime: subhygric to hygric
Drainage: well drained to imperfectly drained

TOPOGRAPHY

Elevation: 1525-1750 m
Slope: 0-31%
Aspect: all aspects
Landscape position: upper slope to lower slope, receiving

ECOLOGY

- open subalpine forests with lush low shrub and herbaceous layers
- fine-textured soils, receiving moisture, are reflected in presence of moisture-loving species such as western meadowrue and green false hellebore
- high productivity for subalpine forests

CLIMATE

Climatic Moisture Deficit/Surplus: >+100 mm
Growing Degree Days: <700-900
Freeze Free Period: <60-30 days

009 **SR 73031**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: young seral
Stand appearance: open coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (5)	alpine fir	5		
Tall shrub layer (40)	alpine fir	40		
Low shrub layer (45)	alpine fir black blueberry Utah honeysuckle	20 20 5		
Herb layer (30)	Sitka valerian one-sided wintergreen violets	10 5 5		
Moss, lichen and liverwort layer (< 5)	hairy cap mosses	< 5		

CHARACTER SPECIES

Present	Absent
alpine fir black blueberry Utah honeysuckle Sitka valerian one-sided wintergreen violets	ponderosa pine beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: colluvial blanket
Soil Texture: silt loam
Soil Association: CN
Moisture regime: mesic
Drainage: well drained

TOPOGRAPHY

Elevation: 1800 m
Slope: 0-3%
Aspect: 225°
Landscape position: upper slope, shedding

ECOLOGY

-pure alpine fir regenerating after fire, proceeding quickly to a climax forest

CLIMATE

-warm dry summer
-light snowpacks, melting early in spring

009-09 Alpine fir – Sitka mountain-ash – blue-bead clintonia – oak fern

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon, Salmon Arm and Trout Lake
Successional stage: maturing climatic climax
Stand appearance: open coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	alpine fir Engelmann spruce	20 varies		
Tall shrub layer (7)	alpine fir Engelmann spruce	7 < 5	Sitka mountain-ash	< 5
Low shrub layer (variable)	alpine fir Engelmann spruce black blueberry	5 < 5 varies	white-flowered rhododendron western thimbleberry twinberry honeysuckle	varies < 5 < 5
Herb layer (50)	blue-bead clintonia unifoliate-leaved foamflower oak fern Sitka valerian	5 5 varies 10	simple-stemmed twistedstalk common lady fern green false hellebore mountain sweetcicely	5 varies < 5 < 5
Moss, lichen and liverwort layer (variable)	miscellaneous mosses	varies		

CHARACTER SPECIES

Present

- alpine fir
- Engelmann spruce
- black blueberry
- Sitka mountain-ash
- blue-bead clintonia
- oak fern
- Sitka valerian
- common lady fern

Absent

- ponderosa pine
- common juniper
- arrow-leaved balsamroot
- spreading dogbane

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: silt loam
Soil Association: SAA, CN, GR, ST, KF
Moisture regime: subhygric to hygric
Drainage: well drained to imperfectly drained

TOPOGRAPHY

Elevation: 1360-1680 m
Slope: 11-40%
Aspect: 135-315°
Landscape position: middle slope, normal, receiving and seepage

ECOLOGY

- improved moisture status due to receiving position and seepage
- rich sites with humus accumulations and mineral enriched seepage water
- added nutrients and moisture may lead to excessive shrub growth after logging

CLIMATE

Climatic Moisture Deficit/Surplus: 0 to >+200 mm
Growing Degree Days: 700-1100
Freeze Free Period: 60-80 days

009-08 Alpine fir – white-flowered rhododendron – five-leaved creeping raspberry – Sitka valerian

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Salmon Arm
Successional stage: maturing climatic climax
Stand appearance: dense coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir

Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (60)	alpine fir Engelmann spruce	35 25		
Tall shrub layer (25)	alpine fir	20	Engelmann spruce	varies
Low shrub layer (60)	white-flowered rhododendron black blueberry	30 20	alpine fir Engelmann spruce Sitka mountain-ash	5 < 5 5
Herb layer (50)	Sitka valerian unifoliate-leaved foamflower blue-bead clintonia	20 5 5	five-leaved creeping raspberry large-leaved rattlesnake orchid one-sided wintergreen oak fern	20 < 5 5 10
Moss, lichen and liverwort layer (5)	cushion moss	5	common moss	< 5

CHARACTER SPECIES

Present	Absent
alpine fir Engelmann spruce white-flowered rhododendron Sitka valerian blue-bead clintonia one-sided wintergreen oak fern	ponderosa pine common juniper arrow-leaved balsamroot spreading dogbane

TERRAIN AND SOILS

Terrain: morainal blankets
Soil Texture: sandy loam to silt clay loam
Soil Association: KE, SAA, KF
Moisture regime: subhygric to hygric
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 1350-1530 m
Slope: 11-31%
Aspect: all aspects
Landscape position: middle slope, normal to receiving

ECOLOGY

- improved moisture status in receiving positions where snow endures until late spring
- fire disturbance may result in open climax forest
- removal of trees may lead to formation of meadows and an excess of soil water may become evident

CLIMATE

Climatic Moisture Deficit/Surplus: >+100 mm
Growing Degree Days: <700-900
Freeze Free Period: 60-80 days

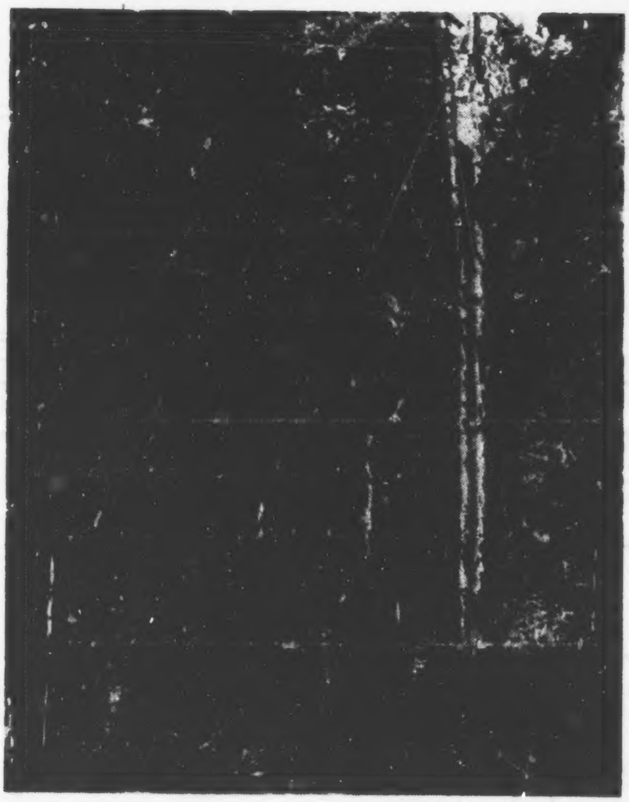


Plate 34. (9) Alpine fir - Sitka mountain-ash - blue-bead clintonia - oak fern vegetation type

Plate 35. (8) Alpine fir - white-flowered rhododendron - five-leaved creeping raspberry - Sitka valerian vegetation type

009-06 Alpine fir – black blueberry – grouseberry – broad-leaved arnica

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon, Salmon Arm and Trout Lake
Successional stage: maturing climatic climax
Stand appearance: open coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (40)	alpine fir Engelmann spruce	30 10		
Tall shrub layer (20)	alpine fir Engelmann spruce	20 5		
Low shrub layer (70)	black blueberry alpine fir	20 15	Sitka mountain-ash grouseberry white-flowered rhododendron Engelmann spruce	5 varies varies < 5
Herb layer (20-25)	broad-leaved arnica Sitka valerian	7 5	one-sided wintergreen blue-bead clintonia five-leaved creeping raspberry five-stamened mitrewort	< 5 < 5 varies varies
Moss, lichen and liverwort layer (10)	cushion moss	10		

CHARACTER SPECIES

Present		Absent
alpine fir	five-leaved creeping raspberry	ponderosa pine
white-flowered rhododendron		common saskatoon
black blueberry		common juniper
grouseberry		arrow-leaved balsamroot
broad-leaved arnica		
Sitka valerian		

TERRAIN AND SOILS

Terrain: colluvial and morainal veneers over rock and morainal blankets
Soil Texture: sandy loam to silt loam
Soil Association: GR, HE, KF, BA, ST
Moisture regime: mesic to subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1590-1785 m
Slope: 11-31%
Aspect: 135-315°
Landscape position: upper slope and middle slope, shedding

ECOLOGY

- climax stands of alpine fir and Engelmann spruce, with a low shrub layer dominated by white-flowered rhododendron or grouseberry
- heavy snowpacks, and short growing seasons limit productivity
- dry site, more likely to occur in Dry Interior Region

CLIMATE

- cool, dry to moist summers
- moderate to high snowpacks, melting by late spring
- short growing season and frost free period

009-05 Alpine fir – bracted lousewort – broad-leaved arnica – Sitka valerian

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon, Salmon Arm and Trout Lake
Successional stage: maturing climatic climax
Stand appearance: parkland coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir

Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (20)	alpine fir	20	Englemann spruce	5
Tall shrub layer (10)	alpine fir	10	Engelmann spruce	< 5
Low shrub layer (variable)	alpine fir	5	black blueberry white-flowered rhododendron	varies varies
Herb layer (70)	Sitka valerian smooth woodrush five-stamened mitrewort	30 7 5	broad-leaved arnica bracted lousewort green false hellebore	20 7 varies
Moss, lichen and liverwort layer	no mosses, lichens or liverworts			

CHARACTER SPECIES

Present	Absent
alpine fir Sitka valerian smooth woodrush five-stamened mitrewort bracted lousewort lupines	ponderosa pine western red cedar western chokecherry pine grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets
Soil Texture: sandy loam to silt loam
Soil Association: LT, SAA, ST, KF
Moisture regime: mesic to subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1740-1950 m
Slope: 11-60%
Aspect: all aspects
Landscape position: upper slope to lower slope, shedding to receiving

ECOLOGY

- meadows are rich in species, often visually striking when blooming
- slow to regenerate after disturbance, may go to open meadow type (harsh climate)
- often good available moisture and associated nutrients

CLIMATE

Climatic Moisture Deficit/Surplus: >+100 mm
Growing Degree Days: <700
Freeze Free Period: <60 days

Plate 36. (6) Alpine fir - black blueberry - grouseberry - broad-leaved arnica vegetation type

Plate 37. (5) Alpine fir - bracted lousewort - broad-leaved arnica - Sitka valerian vegetation type

009-42 Alpine fir – subalpine fleabane – sedges – smooth woodrush

VEGETATION CHARACTERISTICS

Region: Dry Interior and Interior Wet Belt
Section: Vernon, Salmon Arm and Trout Lake
Successional stage: mature edaphic and climatic climax
Stand appearance: parkland coniferous forest and meadows
Zone: Subalpine Engelmann spruce - alpine fir
Subzone: krummholz

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer	no trees			
Tall shrub layer (<5-10)			alpine fir	<5-10
Low shrub layer (15)			alpine fir black blueberry	15 varies
Herb layer (80)	subalpine fleabane smooth woodrush sedges Sitka valerian	10 7 20 5-30	Indian paintbrushes alpine pussytoes yellow glacier lily western pasqueflower western spring beauty	5 varies varies varies 10
Moss, lichen and liverwort layer (variable)	unidentified mosses			

CHARACTER SPECIES

Present

- Merten's cassiope
- red mountain-heather
- subalpine fleabane
- smooth woodrush
- sedges
- Sitka valerian
- Indian paintbrushes
- yellow glacier lily
- western pasqueflower
- western spring beauty
- luetkia

Absent

- ponderosa pine
- Rocky Mountain Douglas-fir
- western red cedar
- common saskatoon
- western wild ginger
- arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: morainal and colluvial blankets, colluvial veneers over rock
Soil Texture: sandy loam to silt loam
Soil Association: CLA, CD, FB, SW, LT
Moisture regime: mesic to subhygric
Drainage: well drained to moderately well drained

TOPOGRAPHY

Elevation: 1870-2100 m
Slope: 11-60%
Aspect: all aspects
Landscape position: upper slope and middle slope, shedding to receiving

ECOLOGY

- these sites although grouped into one vegetation type consist of several ecosystems reflecting differences in exposure, drainage, shape of surface and soil depth
- moisture supplied from snow patches in hollows
- these fragile ecosystems are very susceptible to disturbance and may take many years to recover

CLIMATE

Climatic Moisture Deficit/Surplus: >+100 mm
Growing Degree Days: <700
Freeze Free Period: <60 days

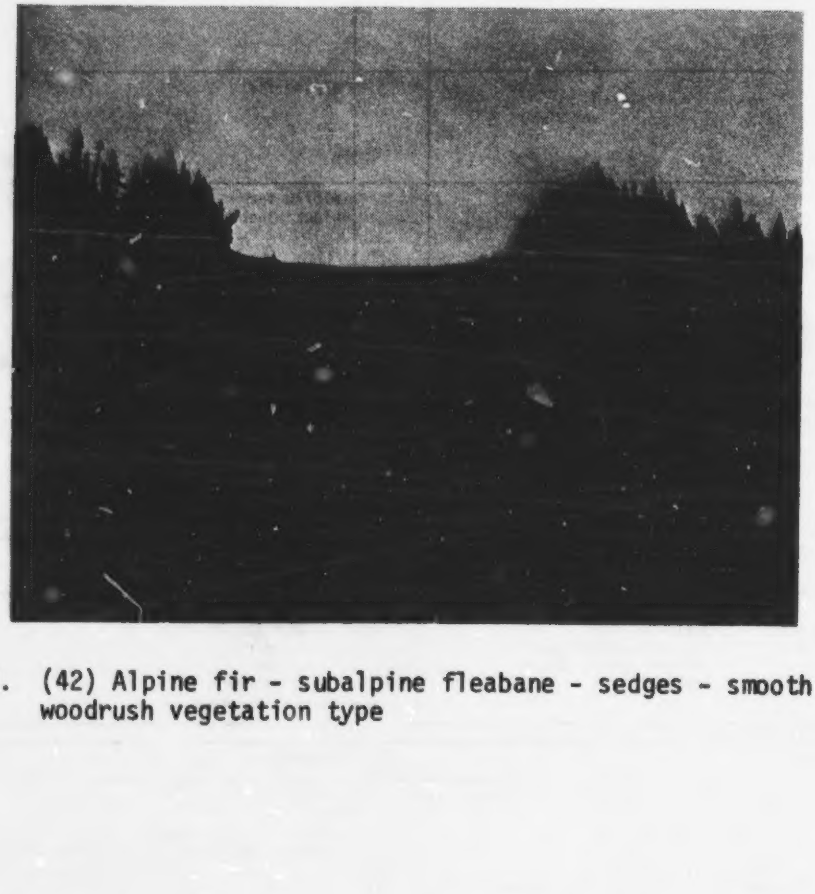


Plate 38. (42) Alpine fir - subalpine fleabane - sedges - smooth woodrush vegetation type

009	**SR 73125**

VEGETATION CHARACTERISTICS

Region: Interior Wet Belt
Section: Trout Lake
Successional stage: mature edaphic climax
Stand appearance: parkland coniferous forest

Zone: Subalpine Engelmann spruce - alpine fir
Subzone: lodgepole pine - whitebark pine

SPECIES COMPOSITION

Layer (% crown cover)	Dominants	% crown cover	Associates	% crown cover
Tree layer (5)	alpine fir	5		
Tall shrub layer (< 5)	alpine fir	< 5		
Low shrub layer (5)	American red elder	5		
Herb layer (95)	sedges fireweed buttercups western pasqueflower	80 7 7 7		
Moss, lichen and liverwort layer (< 5)	hairy cap mosses	< 5		

CHARACTER SPECIES

Present	Absent
alpine fir American red elder sedges fireweed buttercups western pasqueflower	ponderosa pine Rocky Mountain Douglas-fir pine grass beardless bluebunch wheat grass arrow-leaved balsamroot

TERRAIN AND SOILS

Terrain: colluvial blanket
Soil Texture: silt loam
Soil Association: CLA
Moisture regime: subhygric
Drainage: well drained

TOPOGRAPHY

Elevation: 1950 m
Slope: 3-6%
Aspect: 180°
Landscape position: middle slope, receiving

ECOLOGY

-receiving moisture and nutrients from up-slope
-thick sedge and herb layer is preventing establishment of trees

CLIMATE

-cool moist summers
-high snowpacks, melting quickly in spring

2.2 SOILS-VEGETATION LEGENDS FOR THE ZONES OF THE DRY INTERIOR AND INTERIOR WET BELT REGIONS

Table 1. is a list of vegetation type names used in the Soils-Vegetation Legends.

In Tables 2. to 6. the soil associations[1] of the map area are related to vegetation types. Vegetation types preceeded by "006" are defined for: Vegetation Inventory and Interpretation of the Nelson mapsheet area - 82F (unpublished report, van Barneveld). These tables are organized by zones within each Region:

Table 2. SOILS-VEGETATION LEGEND OF THE DRY INTERIOR REGION: INTERIOR ROCKY MOUNTAIN DOUGLAS-FIR ZONE

Table 3. SOILS-VEGETATION LEGEND OF THE DRY INTERIOR REGION: SUBALPINE ENGELMANN SPRUCE - ALPINE FIR ZONE

Table 4. SOILS-VEGETATION LEGEND OF THE INTERIOR WET BELT REGION: INTERIOR WESTERN RED CEDAR AND INTERIOR WESTERN HEMLOCK - WESTERN RED CEDAR ZONES

Table 5. SOILS-VEGETATION LEGEND OF THE INTERIOR WET BELT REGION: SUBALPINE ENGELMANN SPRUCE - ALPINE FIR ZONE

Table 6. SOILS-VEGETATION LEGEND OF THE INTERIOR WET BELT REGION: ALPINE TUNDRA ZONE

In each table the soil associations are ordered alphabetically for the parent material groups: fluvial, lacustrine, colluvial, morainal and organic and the most common soil development for each association is listed.

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[1] More information on soil associations is available in 82 L Soil Legend, Terrestrial Studies Branch, Ministry of Environment, Victoria, B.C.

For each soil association, climax and seral vegetation types are recognized. A vegetation type may represent a climax vegetation type on one soil and a seral vegetation type on a different soil. In contrast, different climax vegetation types may occur on one soil association. Some seral vegetation types, under the influence of edaphic conditions, may be indicated as climax vegetation types. Underlined vegetation types were directly linked to a soils association by at least one sample. For others the relationship of soils and vegetation types have been extrapolated. Where interpretation was difficult "not sampled" is indicated. Soil associations which occur across two or more forest zones will have vegetation types indicative of the range of zones. Soils vary from lithic to seepage phases and vegetation types listed may vary accordingly.

Use of the Legend

The soils-vegetation legend allows the determination of the range of vegetation that may be produced on the various soils, using different habitat management techniques. When used in conjunction with the soil maps the range of vegetation options for each map unit can be assessed for use in planning and management.

TABLE 1.

VEGETATION TYPE NAMES

Vernon map sheet area (009)

1. Western hemlock - western red cedar - western yew - blue-bead clintonia
2. Western hemlock - western red cedar - unifoliate-leaved foamflower - oak fern
3. Western hemlock - alpine fir - black blueberry - blue-bead clintonia
4. Western hemlock - western red cedar - devil's-club - common lady fern
5. Alpine fir - bracted lousewort - broad-leaved arnica - Sitka valerian
6. Alpine fir - black blueberry - grouseberry - broad-leaved arnica
7. Alpine fir - white-flowered rhododendron - black blueberry - Sitka valerian
8. Alpine fir - white-flowered rhododendron - five-leaved creeping raspberry
9. Alpine fir - Sitka mountain-ash - blue-bead clintonia - oak fern
10. Lodgepole pine - common juniper - pine grass - subalpine fleabane
11. Lodgepole pine - alpine fir - black blueberry - blue-bead clintonia
12. Lodgepole pine - alpine fir - black blueberry - violets
13. Rocky Mountain Douglas-fir - alpine fir - Oregon boxwood - Canadian bunchberry
14. Lodgepole pine - alpine fir - Oregon boxwood - one-sided wintergreen
15. Needle-and-thread grass - drooping brome grass - beardless bluebunch wheat grass
16. Ponderosa pine - common snowberry - Sandberg's blue grass - Columbia gromwell
17. Ponderosa pine - common snowberry - beardless bluebunch wheat grass
18. Rocky Mountain Douglas-fir - common snowberry - birch-leaved spirea - pine grass
19. Lodgepole pine - common juniper - pine grass - kinnikinnick
20. Rocky Mountain Douglas-fir - common saskatoon - pine grass - racemose pussytoes
21. Rocky Mountain Douglas-fir - ponderosa pine - tall Oregon-grape - pine grass
22. Rocky Mountain Douglas-fir - birch-leaved spirea - pine grass - showy aster
23. Lodgepole pine - Oregon boxwood - pine grass - showy aster
24. Rocky Mountain Douglas-fir - roses - pine grass - showy aster
25. Lodgepole pine - Oregon boxwood - showy aster - heart-leaved arnica
26. Rocky Mountain Douglas-fir - common paper birch - birch-leaved spirea - large-leaved rattlesnake orchid
27. Trembling aspen - willows - pine grass - western meadowrue
28. Rocky Mountain Douglas-fir - tall Oregon-grape - pine grass - showy aster
29. Rocky Mountain Douglas-fir - western hemlock - Oregon boxwood - one-sided wintergreen
30. Rocky Mountain Douglas-fir - Oregon boxwood - common western pipsissewa - large-leaved rattlesnake orchid
31. Rocky Mountain Douglas-fir - western hemlock - black blueberry - blue-bead clintonia
32. Common paper birch - western red cedar - Oregon boxwood - rough-fruited fairybells

TABLE 1. (Continued)

33. Western red cedar - Oregon boxwood - birch-leaved spirea - large-leaved rattlesnake orchid
34. Trembling aspen - fireweed - Canadian bunchberry
35. Western larch- western red cedar - soopolallie - northern twinflower
36. Common paper birch - western red cedar - Oregon boxwood - blue-bead clintonia
37. Western larch- western red cedar - Oregon boxwood - common western pipsissewa
38. Rocky Mountain Douglas-fir - western hemlock - Oregon boxwood - northern twinflower
39. Rocky Mountain Douglas-fir - western hemlock - black blueberry - rough-fruited fairybells
40. Rocky Mountain Douglas-fir - western red cedar - Oregon boxwood - western bracken
41. Common paper birch - western red cedar - western thimbleberry - trailflower
42. Alpine fir - subalpine fleabane - sedges - smooth woodrush
43. Sandberg's blue grass - yellow salsify - beardless bluebunch wheat grass
44. Western thimbleberry - fireweed - oak fern
45. Black blueberry - Sitka valerian - green false hellebore - oak fern

Nelson map sheet area (006)

1. Alpine fir - western hemlock - white-flowered rhododendron - blue-bead clintonia - unifoliate-leaved foamflower
2. Engelmann spruce - western hemlock - cucumberroot twistedstalk - green-stemmed pipecleaner
3. Western hemlock - Engelmann spruce - common lady fern - oak fern
4. Western hemlock - western yew - devil's-club - oak fern
5. White-flowered rhododendron - alpine fir - Merten's cassiope - mountain-heather complex

6a. Western pasqueflower - western swamp kalmia
6b. Black blueberry - grouseberry - bear-grass - whitebark pine
6c. White-flowered rhododendron - alpine fir - bracted lousewort - sickle-top lousewort
7. Alpine fir - white-flowered rhododendron - green false hellebore - wood-rush
8. Alpine fir - white-flowered rhododendron - one-sided wintergreen - green-stemmed pipecleaner
9. Alpine fir - white-flowered rhododendron - broad-leaved arnica - unifoliate-leaved foamflower
10a. Engelmann spruce - western meadowrue - unifoliate-leaved foamflower
10b. Engelmann spruce - black blueberry - common lady fern - Canada violet
10c. Western hemlock - devil's-club - common lady fern - mnium moss
10d. Western red cedar - western thimbleberry - western wild ginger - trailflower
10e. Engelmann spruce - Sitka mountain alder - western bracken - green false hellebore
11. Rocky Mountain Douglas-fir - common snowberry - pine grass - beardless bluebunch wheat grass
12. Rocky Mountain Douglas-fir - pine grass - western fescue
13. Rocky Mountain Douglas-fir - common snowberry - rough-fruited fairybells - pine grass complex
14a. Bear-grass - asters - western meadowrue - Indian paintbrushes
14b. Blue grass - anemone
15. Rocky Mountain Douglas-fir - common saskatoon - pine grass - western fescue complex

TABLE 1. (Continued)

16. Lodgepole pine - willows - ceanothus - pine grass
17. Western hemlock - devil's-club - blue-bead clintonia - unifoliate-leaved foamflower
18. Western hemlock - western white pine - large-leaved rattlesnake orchid - common moss
19. Rocky Mountain Douglas-fir - western white pine - birch-leaved spirea - blue-bead clintonia
20. Western red cedar - Utah honeysuckle - western yew - blue-bead clintonia
21. Western hemlock - Oregon wintergreen - blue-bead clintonia - green-stemmed pipecleaner
22. Black cottonwood - red-osier dogwood - common snowberry - sweet-scented bedstraw
23. Rocky Mountain Douglas-fir - trembling aspen - western bracken - baldhip rose
24. Trembling aspen - common paper birch - western thimbleberry - western bracken
25. Common paper birch - western bracken - pine grass - mountain sweetcicely
26. Rocky Mountain Douglas-fir - common snowberry - rough-fruited fairybells - mountain sweetcicely
27. Rocky Mountain Douglas-fir - common paper birch - tall Oregon-grape - rough-fruited fairybells
28. Rocky Mountain Douglas-fir - roses - pine grass - spreading dogbane
29. Western red cedar - grand fir - pine grass - western fescue
30. Western larch - western red cedar - roses - blue-bead clintonia
31. Rocky Mountain Douglas-fir - California filbert - western trumpet honeysuckle - wild sarsaparilla
32. Western larch - western red cedar - western thimbleberry - northern twinflower

33a. Rocky Mountain Douglas-fir - birch-leaved spirea - pine grass - arnicas

33b. Lodgepole pine - roses - one-sided wintergreen - pine grass

33c. Lodgepole pine - western hemlock - blue-bead clintonia - cucumberroot twistedstalk

34. Western thimbleberry - soopolallie - blue-bead clintonia - western bracken
35. Lodgepole pine - Oregon boxwood - common saskatoon - pine grass
36. Western larch - Oregon boxwood - common saskatoon - pine grass
37. Lodgepole pine - western red cedar - northern twinflower - wood strawberry
38. Lodgepole pine - soopolallie - western bracken - red-stemmed pipecleaner
39. Lodgepole pine - Engelmann spruce - Oregon boxwood - common western pipsissewa
40. Western hemlock - alpine fir - black blueberry - evergreen yellow violet

41a. Trembling aspen - willows - pearly everlasting - hairy-cap moss

41b. Lodgepole pine - white-flowered rhododendron

42. Black blueberry - Oregon boxwood - western thimbleberry - tall Oregon-grape
43. Western larch - Scouler's willow - twinberry honeysuckle - grouseberry
44. Western larch - western red cedar - blue-bead clintonia - violets
45. Western red cedar - common paper birch
46. Rocky Mountain maple - wild sarsaparilla - sweet-scented bedstraw
47. Engelmann spruce - Oregon boxwood - bear-grass

TABLE 2.
SOILS-VEGETATION LEGEND OF THE DRY INTERIOR REGION: INTERIOR ROCKY MOUNTAIN DOUGLAS-FIR ZONE

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvial terraces	CB	Carabine	Orthic Brown Chernozem	Grasslands and parkland Rocky Mountain Douglas-fir and ponderosa pine	15,16,17,43	15,21,43
	Fluvial fans	D	Dunleavy	Eluviated Eutric Brunisol	Closed forests of Rocky Mountain Douglas-fir and ponderosa pine	16,17,26,28	18,20
	Fluvial floodplain terraces	FA	Falkland	Orthic Regosol	Closed forests of black cottonwood and common paper birch, some cultivated fields	not sampled	not sampled
	Fluvial floodplain terraces	FS	Frances	Gleyed Cumulic Regosol	Closed forests of trembling aspen and white spruce	not sampled	not sampled
	Fluvioglacial terraces	G	Glenemma	Eluviated Eutric Brunisol	Open and closed forests of Rocky Mountain Douglas-fir and ponderosa pine	16,17,28	18,20,21
	Fluvial fans	GL	Gulch	Orthic Dark Gray Chernozem	Grasslands and cultivated fields	15,43	15,43
	Fluvioglacial terraces	GN	Gisbourne	Eluviated Eutric Brunisol	Closed forests of Rocky Mountain Douglas-fir and lodgepole pine	23,25,26,28	18
	Fluvioglacial terraces	GW	Gwen	Orthic Black Chernozem	Grasslands and cultivated fields	15,43	15,43
	Fluvioglacial terraces	GY	Glossey	Eluviated Eutric Brunosol	Parkland and open forest of Rocky Mountain Douglas-fir and ponderosa pine	16,17	21
	Fluvioglacial terraces	N	Nahan	Eluviated Eutric Brunisol	Grasslands and open Rocky Mountain Douglas-fir and ponderosa pine	15,16,17,43	15,21,43
	Fluvial fans	HU	Hupel	Orthic Dystric Brunisol	Closed forests of common paper birch and Rocky Mountain Douglas-fir, cultivated fields	26,28	20,22

TABLE 2 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvial fans	K	Kalamalka	Orthic Black Chernozem	Mostly cultivated fields, some grasslands	15,43	15,43
	Fluvial floodplain terraces	KA	Kosta	Gleyed Dark Gray Chernozem	Grasslands, closed forests of trembling aspen and open forests of Rocky Mountain Douglas-fir and ponderosa pine	15,16,17,43	15,21,43
	Fluvial fans	LY	Lumby	Eluviated Eutric Brunisol	Grasslands and open forests of ponderosa pine and Rocky Mountain Douglas-fir,some cultivated fields	15,21	15,21
	Fluvial terraces	M	Mara	Orthic Gray Luvisol	Mostly cultivated fields	not sampled	not sampled
	Fluvial floodplain terraces	MO	Monashee	Cumulic Regosol	Closed forests of black cottonwood, trembling aspen, common paper birch	not sampled	not sampled
	Fluvial floodplain terraces	N	Nisconlith	Orthic Humic Gleysol	Cultivated fields	not sampled	not sampled
	Fluvial floodplain terraces	SAB	Sunier	Orthic Regosol	Closed forests of Rocky Mountain Douglas-fir and lodgepole pine	23,24	23,24
	Fluvial terraces	STB	Scuitta	Orthic Brown Chernozem	Grasslands, some parkland forests of ponderosa pine, some cultivated fields	15,16,17,43	15,21,43
	Fluvial floodplain terraces	SX	Squilax	Gleyed Rego Dark Brown Chernozem	Grasslands, some cultivated fields	15,43	15,43
	Fluvioglacial terraces	TR	Trehearne	Orthic Eutric Brunisol	Closed forests of Rocky Mountain Douglas-fir, lodgepole pine and western larch	23,28,41	18,22

TABLE 2 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Lacustrine	Glaciolacustrine blanket	BJ	Beaverjack	Orthic Gray Luvisol	Mostly cultivated fields, some closed forests of Rocky Mountain Douglas-fir and common paper birch	26,28	22
	Lacustrine beaches	CL	Celista	Orthic Regosol	Closed forests of Rocky Mountain Douglas-fir and ponderosa pine, cultivated fields	16,17	20,21
	Glaciolacustrine terraces	LM	Lundbom	Orthic Brown Chernozem	Grasslands and cultivated fields	15,43	15,43
	Glaciolacustrine terraces	NK	Neskain	Orthic Dark Gray Chernozem	Grasslands and parkland forests of ponderosa pine	15,16,17,43	15,21,43
	Glaciolacustrine terraces	PD	Pritchard	Eluviated Eutric Brunisol	Grasslands and coniferous open forests of Rocky Mountain Douglas-fir and ponderosa pine	15,16,17	15,21
	Glaciolacustrine blanket	S	Spallumcheen	Orthic Black Chernozem	Grasslands with patches of trembling aspen, some cultivated fields	15,16,27,43	15,27,43
	Glaciolacustrine blanket	T	Tappen	Orthic Gray Luvisol	Closed forests of Rocky Mountain Douglas-fir and common paper birch, some cultivated fields	26,28	22
Colluvial	Colluvial veneer	CG	Cavanaugh	Eluviated Eutric Brunisol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir, western larch and lodgepole pine (some ponderosa pine)	19,20,23	20,21,22
	Colluvial veneer (blanket)	CM	Chasm	Eluviated Eutric Brunisol (lithic phase)	Open to closed forests of Rocky Mountain Douglas-fir, western larch and lodgepole pine (some ponderosa pine)	17,19,20,23	20,21,22
	Colluvial veneer (blanket)	CPA	Clapperton	Orthic Dystric Brunisol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir	23,25,28	18,20,22

TABLE 2 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Colluvial	Colluvial veneer	HO	Hooligan	Eluviated Dystric Brunisol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir, lodgepole pine and trembling aspen	24,25,28	18,22
	Colluvial veneer	HS	Hobbs	Orthic Dystric Brunisol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir, lodgepole pine and common paper birch	23,24,25	22
	Colluvial veneer (blanket)	KG	Kenogan	Eluviated Eutric Brunisol (lithic phase)	Open and closed forests of Rocky Mountain Douglas-fir and ponderosa pine	16,17	20,21
	Colluvial veneer (blanket)	KR	Krieger	Orthic Dystric Brunisol (lithic phase)	Grasslands and open and closed forests of Rocky Mountain Douglas-fir and ponderosa pine	15,17,43	15,18,21
Morainal	Morainal blanket	A	Armstrong	Orthic Black Chernozem	Grasslands and open coniferous forests of ponderosa pine and Rocky Mountain Douglas-fir	15,16,17,43	15,21,43
	Morainal blanket	AL	Allie	Brunisolic Gray Luvisol	Closed forests of Rocky Mountain Douglas-fir and common paper birch	26,28	22
	Morainal blanket (veneer)	AN	Artisan	Brunisolic Gray Luvisol	Closed forests of Rocky Mountain Douglas-fir and common paper birch	26,28	22
	Morainal blanket	C	Connally	Orthic Gray Luvisol	Open and closed forests of Rocky Mountain Douglas-fir and ponderosa pine	17	18,22
	Morainal blanket	CY	Cherryville	Brunisolic Gray Luvisol	Closed forests of Rocky Mountain Douglas-fir, common paper birch and western red cedar	13,26,28,29 30,31,33	22

TABLE 2 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Morainal	Morainal blanket	MG	McKnight	Orthic Brown Chernozem	Grasslands, with ponderosa pine establishing on edges	15,16,17,43	15,21,43
	Morainal blanket (veneer)	GA	Gregoire	Eluviated Eutric Brunisol	Parkland and open forests of ponderosa pine and Rocky Mountain Douglas-fir	16,17,43	18,21,43
	Morainal blanket (veneer)	ML	McLaren	Orthic Gray Luvisol	Grasslands, closed forests of trembling aspen and open forests of Rocky Mountain Douglas-fir and ponderosa pine	16,27	21,22
	Morainal blanket (veneer)	MN	Minnie	Orthic Gray Luvisol	Closed forests of Rocky Mountain Douglas-fir, common paper birch, trembling aspen and lodgepole pine	21,23,24,25 26,27,28,30 41	21,22
	Morainal blanket	MS	Mossey	Orthic Black Chernozem	Grasslands and open forests of Rocky Mountain Douglas-fir and ponderosa pine	15,16,17,43	15,21,43
	Morainal blanket	TE	Tullee	Orthic Black Chernozem	Grasslands and cultivated fields	15,43	15,43
	Morainal blanket	TM	Timber	Eluviated Eutric Brunisol	Open forests of Rocky Mountain Douglas-fir and ponderosa pine	16,17	20,21
	Morainal blanket (veneer)	TW	Tunkwa	Orthic Gray Luvisol	Closed forests of lodgepole pine, common paper birch, ponderosa pine and Rocky Mountain Douglas-fir	19,20,21,24 25,28,32,33 37	20,22
Organic	Organic blanket	RL	Rail	Typic Mesisol	Organic wetlands dominated by sedges, willows and wetland grasses	not sampled	not sampled

TABLE 3.

SOILS-VEGETATION LEGEND OF THE DRY INTERIOR REGION: SUBALPINE ENGELMANN SPRUCE - ALPINE FIR ZONE

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvioglacial terraces	HE	Henning	Orthic Dystric Brunisol	Closed forests of lodgepole pine, Engelmann spruce and alpine fir	12,45	6,7,9
Colluvial	Colluvial veneer	BA	Bankier	Orthic Dystric Brunisol (lithic phase)	Closed forests of lodgepole pine and Engelmann spruce	11,12	6
	Colluvial veneer (blanket)	CS	Columns	Orthic Dystric Brunisol (lithic phase)	Closed forests of lodgepole pine and Engelmann spruce	11,12,45	6
	Colluvial veneer	HA	Hallamore	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of lodgepole pine, Engelmann spruce and alpine fir	11	7,8,9
Morainal	Morainal blanket (veneer)	AA	Allamore	Podzolic Gray Luvisol	Closed forests of Engelmann spruce and alpine fir	11,12,45	7,8,9
	Morainal blanket (veneer)	FH	Fly Hills	Orthic Humo-Ferric Podzol	Mostly seral closed forests of lodgepole pine with Rocky Mountain Douglas-fir, some mature Engelmann spruce and alpine fir	10,11,45	8
	Morainal blanket (veneer)	GR	Grant	Brunisolic Gray Luvisol	Closed forests of lodgepole pine, Engelmann spruce and alpine fir	11,12,14,25	6,9
	Morainal blanket (veneer)	TU	Truda Mountain	Brunisolic Gray Luvisol	Closed forests of lodgepole pine and Engelmann spruce often with a component of Rocky Mountain Douglas-fir	11,12	7,9
	Morainal blanket (veneer)	WI	Wilbert	Orthic Dystric Brunisol	Closed forests of lodgepole pine, Engelmann spruce and alpine fir	11,12	6,7,9
Organic	Organic blanket	ET	Etches	Typic Mesisol	High elevation bogs dominated by sedges	not sampled	not sampled

TABLE 4.

SOILS-VEGETATION LEGEND OF THE INTERIOR WET BELT REGION: INTERIOR WESTERN RED CEDAR AND INTERIOR WESTERN HEMLOCK - WESTERN RED CEDAR ZONES

Vegetation type numbers preceeded by "006" refer to vegetation types defined for: Vegetation Inventory and Interpretation of the Nelson mapsheet area -82F

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvial floodplain terraces	AS	Avis	Orthic Regosol	Willow thickets and closed forests of black cottonwood, white spruce and western red cedar	not sampled 006: 22,46	not sampled 006: 3,10d, 22,46
	Fluvial terraces	AU	Argonaut	Orthic Humo-Ferric Podzol	Willow thickets and closed forests of black cottonwood, white spruce and western red cedar	not sampled	not sampled
	Fluvial floodplain terraces	BD	Byrd Creek	Orthic Regosol	Closed forests of western red cedar, western hemlock and common paper birch, some cultivated fields	not sampled	not sampled
	Fluvial fans	FT	Fruitvale	Orthic Dystric Brunisol	Closed forests of western red cedar, Rocky Mountain Douglas-fir and common paper birch	37,38 006: 32,36 46	1 006: 3,17
	Fluvial fans	GD	Grinrod	Orthic Regosol	Closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar	38	1
	Fluvial fans	HU	Hupel	Orthic Dystric Brunisol	Closed forests of western red cedar, Rocky Mountain Douglas-fir and common paper birch	37,38	1
	Fluvioglacial terraces	KK	Kwikoit	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir and western hemlock or western hemlock and western red cedar	31,35,37,44	1,4
	Fluvioglacial terraces	KO	Kaslo	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir and western hemlock or western hemlock and western red cedar	31,35,37,44 006: 3,16, 18,24,36,38 39,40,44	1,4 006: 1,2,4, 9,10b,17,21 40

TABLE 4 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvial fans	KV	Kirbyville	Orthic Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir, common paper birch and western hemlock	37,38,40	1,4
	Fluvioglacial terraces	KX	Kuskanax	Orthic Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir and western hemlock or western hemlock and western red cedar	11,31 35,37 38	1,4
	Fluvioglacial terraces	LH	Larch Hill	Eluviated Eutric Brunisol	Open forests of Rocky Mountain Douglas-fir, or closed forests of western red cedar and common paper birch	20,32,36,38	20,22
	Fluvial floodplain terraces	MC	Mable	Gleyed Regosol	Closed forests of western red cedar and white spruce	not sampled	not sampled
	Fluvial floodplain terraces	MO	Monashee	Cumulic Regosol	Closed forests of western red cedar and black cottonwood, some cultivated	not sampled	4
	Fluvioglacial blanket	SF	Sauff	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir, lodge-pine and western red cedar	30,35,37,38	
	Fluvioglacial terraces	SH	Shuswap	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir and western red cedar or western hemlock and western red cedar	17,20,25,26 28,30,32,34 35,37	1,3,4,21
	Fluvial fans	SK	Sitkum	Orthic Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir, common paper birch and western hemlock	37,38,40	1,4
	Fluvial terraces	SQ	Solsqua	Orthic Gray Luvisol	Closed forests of black cottonwood and western red cedar, some cultivated	not sampled	not sampled

TABLE 4 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvioglacial terraces	WD	Wolfenden	Orthic Humo-Ferric Podzol	Closed forests of western hemlock, western red cedar and Rocky Mountain Douglas-fir	37,38,40,44	1,2,3,4
	Fluvial fans	WH	White	Orthic Eutric Brunisol	Open forests of Rocky Mountain Douglas-fir and ponderosa pine	17	21
	Fluvioglacial terraces	WP	Wap	Orthic Humo-Ferric Podzol	Large portions recently logged, closed forests of western hemlock and western red cedar	40,44	1,4
Lacustrine	Glaciolacustrine blanket	T	Tappen	Orthic Gray Luvisol	Closed forests of common paper birch, western red cedar and Rocky Mountain Douglas-fir	32,36,38	1
Colluvial	Colluvial veneer	AG	Angle	Eluviated Eutric Brunisol (lithic phase)	Highly variable open to closed forests of Rocky Mountain Douglas-fir, ponderosa pine, trembling aspen, lodgepole pine, western red cedar and western hemlock	21,27,28,30	1,21,22
	Colluvial veneer (blanket)	AT	Anglemont	Eluviated Dystric Brunisol (lithic phase)	Closed forests of either Rocky Mountain Douglas-fir or western hemlock and western red cedar, often with trembling aspen	14,34	2,4,22
	Colluvial veneer	BH	Buhl	Orthic Dystric Brunisol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir, western red cedar and western hemlock	31,39 006: 1,3,11 19,32,39	1 006: 1,3,4, 10c,12,15, 17,21
	Colluvial blanket (veneer)	BK	Bohan	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir, common paper birch and western white pine	38,41 006: 19,20, 23,39,42,43 44	1 006: 4,9,20 21,26,29, 33a
	Colluvial blanket (veneer)	BY	Blaylock	Orthic Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar	29	1

TABLE 4 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Colluvial	Colluvial blanket (veneer)	CA	Cayenne	Orthic Humo-Ferric Podzol	Closed forests of western hemlock and western red cedar or alpine fir and Engelmann spruce	11,14,39	2,4,7,8,9
	Colluvial blanket (veneer)	CP	Cooper	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir, western larch, western hemlock and western red cedar	31,35,39	1,2,3
	Colluvial blanket (veneer) - avalanched	CSA	Mount Cond	Sombric Humo-Ferric Podzol	Treeless snowchutes dominated by alders and moisture loving herbs	not sampled	not sampled
	Colluvial blanket (veneer)	CX	Comaplix	Orthic Humo-Ferric Podzol	Closed forest of alpine fir and western hemlock or western hemlock and western red cedar	14,29,35	1,3
	Colluvial blanket (veneer)	HW	Hanakwa	Orthic Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar	14,29,35	1,3
	Colluvial veneer (blanket)	VN	Vermelin	Eluviated Dystric Brunisol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir and lodgepole pine or western hemlock and western red cedar	24,25,29,35 41	1,2,3,22
Morainal	Morainal blanket	GH	Grizzly Hill	Eluviated Eutric Brunisol	Vegetation ranges from grasslands to closed forests of Rocky Mountain Douglas-fir or western hemlock and western red cedar	16,17,23,26	21,1
	Morainal blanket	HN	Hobson	Brunisolic Gray Luvisol	Closed forests of Rocky Mountain Douglas-fir, common paper birch, western red and western hemlock	13,21,24,25 29,30,31,33 34,36	1,2,3,4,22

TABLE 4 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Morainal	Morainal blanket (veneer)	MT	Messiter	Brunisolic Gray Luvisol	Variable forests composed of any of Rocky Mountain Douglas-fir, western hemlock, lodgepole pine, western red cedar and western white pine	29,31,32,36 38,41,44	1,2,3,4,22
	Morainal veneer	SB	Stubbs	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of western hemlock and western red cedar	29	3
	Morainal blanket (veneer)	SL	Sentinel	Orthic Dystric Brunisol	Closed forests of Rocky Mountain Douglas-fir, western larch, western hemlock and western red cedar	31,39 006: 16,19, 24,36,38,39 40,41a,43	1,2,3 006: 4,9, 10a,10c,21, 40
	Morainal blanket (veneer)	SN	Slocan	Orthic Dystric Brunisol	Closed forests of lodgepole pine and western hemlock or western hemlock and western red cedar	14 006: 1,2,3, 19,20,36,39 40,41a,44	1,4 006: 1,2,3, 10a,20,21, 29,40
	Morainal blanket (veneer)	SR	Stobart	Orthic Humo-Ferric Podzol	Closed forests of western red cedar, alpine fir and western white pine or western hemlock and western red cedar	11,14	2
	Morainal blanket (veneer)	STA	Sunset	Orthic Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir, western hemlock and common paper birch or western hemlock and western red cedar	39,40,44	1,2,3,4
	Morainal blanket (veneer)	TMA	Tumtum	Duric Humo-Ferric Podzol	Closed forests of Rocky Mountain Douglas-fir, western red cedar and western hemlock	37,39,41	1,2,3,4
Organic	Organic blanket	BE	Brewster	Typic Fibrisol	Organic wetlands dominated by sedges and sphagnum mosses	not sampled	not sampled
	Organic blanket	WY	Waby	Mesic Fibrisol	Organic wetlands dominated by sedges and sphagnum mosses	not sampled	not sampled

TABLE 5.

SOILS-VEGETATION LEGEND OF THE INTERIOR WET BELT REGION: SUBALPINE ENGELMANN SPRUCE - ALPINE FIR ZONE

Vegetation type numbers preceeded by "006" refer to vegetation types defined for: Vegetation Inventory and Interpretation of the Nelson mapsheet area -82F

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Fluvial	Fluvioglacial blanket	SU	Spectrum	Orthic Humo-Ferric Podzol	Closed forests of lodgepole pine, alpine fir and Engelmann spruce	11,14	7,8
Colluvial	Colluvial veneer	BAA	Beaton Creek	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of alpine fir and Engelmann spruce	14	6,9
	Colluvial veneer	BOA	Bonner	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of alpine fir and Engelmann spruce	14	6,9 006: 5,7
	Colluvial veneer (blanket)	BTA	Bluejoint	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of Engelmann spruce and alpine fir, often with lodgepole pine	11	7,8
	Colluvial veneer	CC	Coppercrown	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of Engelmann spruce, and alpine fir	14	6,9
	Colluvial veneer	CLA	Candle	Orthic Humo-Ferric Podzol (lithic phase)	Open to closed forests of alpine fir and Engelmann spruce sometimes interspersed with meadows	12,14	5,6,7,8,9, 42
	Colluvial veneer (blanket)	CN	Cinnemousen	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of Rocky Mountain Douglas-fir or alpine fir and Engelmann spruce	14,25	1,9,22
	Colluvial veneer	FB	Frisby	Orthic Humo-Ferric Podzol (lithic phase)	Open to closed forests of alpine fir and Engelmann spruce often interspersed with krummholz and meadows	14	5,6,7,42
	Colluvial veneer (blanket)	LT	Lost	Orthic Ferro-Humic Podzol (lithic phase)	Closed forests of alpine fir and Engelmann spruce or patches of same interspersed with meadows and krummholz	14	5,6,7,42
	Colluvial blanket (veneer)	RF	Ratchford	Orthic Humo-Ferric Podzol	Closed forests of alpine fir and Engelmann spruce	14	6,7,8,9

TABLE 5 (Continued)

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Colluvial	Colluvial veneer - nivated and soliflucted	SW	Sawtooth	Sombric Humo-Ferric Podzol (lithic phase)	Krummholz and herbacious meadows	5,42	5,42
	Colluvial veneer	YW	Yeoward	Orthic Humo-Ferric Podzol (lithic phase)	Closed forests of alpine fir and Engelmann spruce, some krummholz and meadows	14	5,7,8,42
Morainal	Morainal blanket	AH	Ashton	Eluviated Dystric Brunisol	Open forests of lodgepole pine, Engelmann spruce and alpine fir	11	6,9
	Morainal blanket	AM	Armour	Orthic Humo-Ferric Podzol	Closed forests of alpine fir and Engelmann spruce	14,45	7,8,9
	Morainal blanket	KF	Keefer	Orthic Humo-Ferric Podzol	Variable subalpine vegetation from forested to meadows	10,11,13	5,6,7,8,9
	Morainal blanket (veneer)	SAA	Snookwa	Orthic Humo-Ferric Podzol	Closed forests of western hemlock or alpine fir and Engelmann spruce	10,11,30,45	3,4,5,7,8,9
	Morainal blanket (veneer)	ST	St. Leons	Orthic Humo-Ferric Podzol	Variable subalpine vegetation from forested to meadows	14	3,4,5,6,7,9
	Morainal blanket	TT	Trident	Orthic Humo-Ferric Podzol	Closed forests of alpine fir and Engelmann spruce	14	6,7,8,9
Organic	Organic blanket	BE	Brewster	Typic Fibrisol	Treeless organic bogs dominated by sedges	not sampled	not sampled
	Organic blanket	RA	Rayonier	Sphagno-Fibrisol	Treeless organic bogs dominated by sphagnum mosses	not sampled	not sampled

TABLE 6.
SOILS-VEGETATION LEGEND OF THE INTERIOR WET BELT REGION: ALPINE TUNDRA
Vegetation type numbers preceeded by "006" refer to vegetation types defined for: Vegetation Inventory and Interpretation of the Nelson mapsheet area -82F

SOIL PARENT MATERIAL		SOIL[1] ASSOCIATION SYMBOL	SOIL ASSOCIATION[2] NAME	MOST COMMON SOIL[3] PROFILE DEVELOPMENT	GENERAL VEGETATION COMMENTS[4]	VEGETATION TYPE[5]	
						SERAL	CLIMAX
Colluvial	Colluvial veneer - nivated and soli-flucted	BC	Beatrice	Orthic Humo-Ferric Podzol (lithic phase)	Patches of alpine fir with intermixed meadows	5 006: 7,41b	5 006: 1,3,5, 7,8,10a,10b
	Colluvial veneer - nivated and solif-flucted	CD	Copeland	Sombric Humo-Ferric Podzol (lithic phase)	Patches of alpine fir, krumm-holz, meadows and alpine vegetation	5,42	5,42
	Colluvial veneer - nivated and soli-flucted	RLA	Rossland	Sombric Humo-Ferric Podzol (lithic phase)	Patches of alpine fir, krumm-holz, meadows and alpine vegetation	5,42 006: 6b,14a 14b	5,42 006: 5
	Colluvial veneer - nivated and soli-flucted	SSA	Soards	Sombric Humo-Ferric Podzol (lithic phase)	Patches of alpine fir, krumm-holz, meadows and alpine vegetation	5,42	5,42
	Colluvial blanket - avalanched	YR	Ymir	Orthic Regosol	Sparse vegetation limited to scrubby shrubs and herbs	not sampled 006: 1,14a	not sampled 006: 1,47

Footnotes for Tables 2. to 6.:

[1] Soil Association Symbols are from Soils of the Vernon Map Area - Soils Maps and Legend, 1980, T.S.B. Victoria, B.C. (available through the Library, T.S.B., Victoria).

[2] For full descriptions of the Soil Associations see Soils of the Vernon Map Area - Soils Maps and Legend, 1980, T.S.B. Victoria, B.C. (available through the Library, T.S.B., Victoria).

[3] Most Common Soil Profile Developments are those most frequently found in the landscape for that association. Terminology is after Canada Department of Agriculture, 1978 - The Canadian System of Soil Classification, Ottawa, Ontario.

[4] The characteristic vegetation is listed for the most common soil. Vegetation types typical of the Dry Interior Region (grasslands and ponderosa pine forests) occur on excessively dry sites within the Interior Wet Belt Region.

[5] Many of the vegetation samples occurred on a few of the soil associations which were common throughout the study area. For this reason many of the vegetation types have been extrapolated over the remaining soils, using vegetation data and forest zonation maps. No order of dominance or importance is implied.

2.3 KEY TO THE BROAD VEGETATION GROUPS AND VEGETATION TYPES

The key provides a means of identifying vegetation types in the field. This is done by proceeding through a sequence of steps. At each step a choice between two alternatives is made based on the presence or absence of key plants. The final point in each sequence is a vegetation type although the key can be used to identify broader vegetation patterns represented by the intermediate steps. Relationships Among Vegetation Types (Figure 1.) shows graphically how the vegetation types relate to each other and helps to maintain an overview of the key structure.

The key consists of two parts. The first part leads to identification of broad vegetation groups (section 3.1 of Volume I) which are groupings of vegetation types based on broadly similar environmental conditions and species composition. The second part presents keys to the vegetation types within each broad group.

For each step a general description of the vegetation is included. The species in the general description are not necessarily unique and for this reason a list of key species is provided. Species without brackets are unique to that step. Species in brackets may be found at both choices of that step, but are more likely to occur for the indicated choice. Not all species listed at each step may occur. The choice of an alternative at each step is based on a "best fit" concept. The broad groups are colour coded. These colours can be linked to the vegetation type keys within the broad groups and relevant sections of Volume I.

If a vegetation type cannot be identified by going through the key, a new vegetation type which is not described may have been encountered, or a wrong choice may have been made in the key. Progressing through the key a second time will reduce errors of the second type. If a new vegetation type is discovered, additional vegetation sampling will be required.

2.3.1 Key to the Broad Vegetation Groups

1a Grasslands and parkland forests of ponderosa pine and Rocky Mountain Douglas-fir. Shrubs that occur only sporadically are common snowberry, big-basin sagebrush, common saskatoon and western chokecherry. The herb cover is often dominated by grasses such as needle-and-thread grass, Sandberg's blue grass, drooping brome grass, beardless bluebunch wheat grass and prairie koelaria. Other herbs occurring are arrow-leaved balsamroot, yellow salsify, Columbia gromwell, brittle prickly-pear cactus, timber milk-vetch and lupines.

Key species are:

Sandberg's blue grass
timber milk-vetch
yellow salsify
arrow-leaved balsamroot
small western needle grass
Columbia gromwell
prairie koelaria

(ponderosa pine)
(beardless bluebunch wheat grass)
(drooping brome grass)

GROUP A

1b All other vegetation types including open and closed forests of Rocky Mountain Douglas-fir, lodgepole pine, western larch, western white pine, common paper birch, trembling aspen, western red cedar, western hemlock, alpine fir and Engelmann spruce. Also included are recently logged sites, krummholz and alpine tundra.

Key species are:

alpine fir
Engelmann spruce
western hemlock
western red cedar
trembling aspen
western larch
western white pine
white-flowered rhododendron
common western pipsissewa
blue-bead clintonia
rough-fruited fairybells
subalpine fleabane
green false hellebore

(Oregon boxwood)
(Rocky Mountain maple)
(soopolallie)
(pine grass)
(strawberries)

ALL OTHER GROUPS GO TO 2a

2a Low and middle elevation (below 1200 m) forests (including logged sites) dominated by any combination of Rocky Mountain Douglas-fir, western larch, western white pine, trembling aspen, western red cedar and western hemlock. Typical shrubs are common snowberry, birch-leaved spirea and Oregon boxwood. Representative herbs are pine grass, common western pipsissewa and rough-fruited fairybells.

Key species are:

Rocky Mountain Douglas-fir
western larch
common paper birch
common saskatoon
soopolallie
birch-leaved spirea
western fescue
showy aster
rough-fruited fairybells
common western pipsissewa
northern twinflower

(western hemlock)
(western red cedar)
(devil's-club)
(pine grass)
(common lady fern)

GROUPS B TO L GO TO 3a

2b High elevation (above 1200 m) environments (including logged sites) dominated by any combination of alpine fir, Engelmann spruce and lodgepole pine, krummholz and alpine tundra. Shrubs which occur frequently are white-flowered rhododendron and swamp black gooseberry. Typical herbs are green false hellebore, broad-leaved arnica, subalpine fleabane, five-stamened mitrewort, yellow glacier lily and alpine pussytoes.

Key species are:

broad-leaved arnica
arrow-leaved ragwort
subalpine buttercup
western pasqueflower
yellow glacier lily
alpine pussytoes
luetkia
white globeflower

(alpine fir)
(Engelmann spruce)
(white-flowered rhododendron)
(Sitka mountain-ash)
(Sitka valerian)
(green false hellebore)
(subalpine fleabane)
(five-stamened mitrewort)

GROUPS M AND N GO TO 13a

3a Open to closed forests of Rocky Mountain Douglas-fir often mixed with lodgepole pine or common paper birch, with occasional western larch, western red cedar and ponderosa pine. Representative shrubs are common juniper, oceanspray and common snowberry while typical herbs are racemose pussytoes, heart-leaved arnica and pine grass.

Key species are:

ponderosa pine
western chokecherry
common juniper
oceanspray
Nuttal's pussytoes
common yarrow
sagebrush mariposa lily

(common snowberry)
(heart-leaved arnica)
(pine grass)
(racemose pussytoes)
(cream-coloured peavine)
(American vetch)

GROUPS B TO G GO TO 4a

3b Open to closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar. Western hemlock and western red cedar may grow in pure stands. Frequently occurring trees are common paper birch, lodgepole pine, western larch and western white pine. Representative shrubs are black blueberry, Oregon wintergreen, Sitka mountain-ash, devil's-club and western yew, while typical herbs are common pink pyrola, western bracken, Canadian bunchberry, unifoliate-leaved foamflower, oak fern and five-leaved creeping raspberry.

Key species are:

western white pine
Oregon wintergreen
devil's-club
Sitka mountain-ash
western yew
unifoliate-leaved foamflower
five-leaved creeping raspberry
western wild ginger
oak fern

(western hemlock)
(black blueberry)
(red huckleberry)
(common pink pyrola)
(western bracken)
(Canadian bunchberry)

GROUPS H TO L GO TO 9a

4a Open lodgepole pine forests on high elevation (above 1500 m) south-facing slopes. Alpine fir is usually regenerating in the shrub layers. Characteristic shrubs are common juniper, and black blueberry while typical herbs present are pine grass, subalpine fleabane, grouseberry and lupines.

Key species are:

alpine fir
white-flowered rhododendron
lupines
subalpine fleabane

(common juniper)
(black blueberry)
(grouseberry)
(western meadowrue)

GROUP B

4b Open to closed Rocky Mountain Douglas-fir forests on all aspects often mixed with lodgepole pine, common paper birch and ponderosa pine. Occasionally found are western larch and western red cedar. Characteristic shrubs are western trumpet honeysuckle, tall Oregon-grape, western thimbleberry and Rocky Mountain maple while typical herbs present are white-flowered hawkweed, showy aster, rough-fruited fairybells and large-leaved rattlesnake orchid.

Key species are:

- western larch
- common paper birch
- western trumpet honeysuckle
- common snowberry
- tall Oregon-grape
- roses
- western thimbleberry
- white-flowered hawkweed
- showy aster
- rough-fruited fairybells
- large-leaved rattlesnake orchid
- American vetch
- cream-coloured peavine

(Rocky Mountain Douglas-fir)

GROUPS C TO G GO TO 5a

5a Open trembling aspen forests with occasional Rocky Mountain Douglas-fir. Typical shrubs are willows, common saskatoon, roses and western thimbleberry, while characteristic herbs are clovers, Columbia brome grass, fireweed, western meadowrue, cream-coloured peavine and American vetch.

Key species are:

no species are unique

(trembling aspen)
(willows)
(western thimbleberry)
(clovers)
(Columbia brome grass)
(fireweed)
(western meadowrue)
(American vetch)
(cream-coloured peavine)
(common dandelion)

GROUP C

5b Open to closed Rocky Mountain Douglas-fir forests often mixed with common paper birch or lodgepole pine. Occasionally present are western red cedar, western larch, ponderosa pine and trembling aspen. Typical shrubs are Rocky Mountain maple, tall Oregon-grape and birch-leaved spirea, while characteristic herbs are racemose pussytoes, common western pipsissewa and large-leaved rattlesnake orchid.

Key species are:

- western larch
- racemose pussytoes
- common western pipsissewa
- large-leaved rattlesnake orchid
- wild sarsaparilla
- (Rocky Mountain Douglas-fir)
- (lodgepole pine)
- (Rocky Mountain maple)
- (one-sided wintergreen)

GROUPS D TO G GO TO 6a

6a Open to closed forests of Rocky Mountain Douglas-fir often mixed with common paper birch and lodgepole pine. Occasionally present are western larch, western red cedar and ponderosa pine. Representative shrubs are western trumpet honeysuckle, common snowberry, western thimbleberry and Rocky Mountain maple, while frequently occurring herbs are showy aster, rough-fruited fairybells, and one-sided wintergreen.

Key species are:

- common paper birch
- western red cedar
- common snowberry
- western thimbleberry
- Rocky Mountain maple
- rough-fruited fairybells
- (Rocky Mountain Douglas-fir)
- (showy aster)
- (one-sided wintergreen)

GROUPS D, E AND F GO TO 7a

6b Open lodgepole pine forests at high elevations (above 1000 m) on south and west aspects often with some regenerating Rocky Mountain Douglas-fir. Representative shrubs are common juniper, Oregon boxwood and birch-leaved spirea, while frequently occurring herbs are kinnikinnick, pine grass and strawberries.

Key species are:

- grouseberry
- (lodgepole pine)
- (alders)
- (common juniper)
- (kinnikinnick)
- (field pussytoes)
- (common yarrow)

GROUP G

7a Parkland to closed forests of Rocky Mountain Douglas-fir occasionally mixed with ponderosa pine. Typical shrubs are common juniper and common snowberry, while characteristic herbs are hounds-tongue hawkweed, kinnikinnick, pine grass, timber milk-vetch, common yarrow and lupines.

Key species are:

hounds-tongue hawkweed
timber milk-vetch
drooping brome grass
(ponderosa pine)
(common juniper)
(common yarrow)
(lupines)

GROUP D

7b Predominantly closed (some open) forests of mixed Rocky Mountain Douglas-fir, common paper birch and lodgepole pine. Occasionally regenerating is western red cedar. Typical shrubs are tall Oregon-grape, birch-leaved spirea, western thimbleberry and black blueberry, while characteristic herbs are Columbia lily, common western pipsissewa, northern twinflower, one-sided wintergreen and blue-bead clintonia.

Key species are:

western larch
western thimbleberry
black blueberry
common western pipsissewa
blue-bead clintonia
(lodgepole pine)
(common paper birch)
(western red cedar)
(Columbia lily)
(northern twinflower)

GROUPS E AND F GO TO 8a

8a Closed forests of Rocky Mountain Douglas-fir often with lodgepole pine or common paper birch. Characteristic shrubs are common saskatoon, common snowberry and trembling aspen, while representative herbs are Columbia lily, racemose pussytoes, kinnikinnick, heart-leaved arnica, pine grass and strawberries.

Key species are:

trembling aspen
racemose pussytoes
kinnikinnick
American vetch
(common saskatoon)
(common snowberry)
(Columbia lily)
(heart-leaved arnica)
(pine grass)

GROUP E

8b Closed mixed forests of Rocky Mountain Douglas-fir, common paper birch and lodgepole pine. Western red cedar may be a component of the tree layer and is always regenerating in the shrub layer. Characteristic shrubs are Oregon boxwood, birch-leaved spirea and Utah honeysuckle, while typical herbs are blue-bead clintonia, northern twinflower and rough-fruited fairybells.

Key species are:

western hemlock

(western red cedar)
(Utah honeysuckle)
(blue-bead clintonia)
(northern twinflower)

GROUP F

9a Recently logged sites of the Interior Wet Belt Region. Tree layers are lacking but western red cedar, western hemlock or trembling aspen may be regenerating. Typical shrubs are American red raspberry and western thimbleberry while characteristic herbs are fireweed, Canadian bunchberry and pearly everlasting.

Key species are:

American red raspberry
western fescue
great mullein

(trembling aspen)
(willows)
(pearly everlasting)
(common dandelion)

GROUP H

9b Open to closed forests of western hemlock and western red cedar often with some Rocky Mountain Douglas-fir, common paper birch and lodgepole pine. Occasionally occurring trees are western larch, western white pine, alpine fir and Engelmann spruce. Typical shrubs are black blueberry, Oregon boxwood, devil's-club and Oregon wintergreen while characteristic herbs are common western pipsissewa, one-sided wintergreen, five-leaved creeping raspberry and common lady fern.

Key species are:

western hemlock (trees)
western red cedar (trees)
Oregon boxwood
Sitka mountain-ash
devil's-club
western yew
common western pipsissewa
five-leaved creeping raspberry
common lady fern

(Utah honeysuckle)

GROUPS I TO L GO TO 10a

10a Open to closed forests of Rocky Mountain Douglas-fir and lodgepole pine without western hemlock or western red cedar in the tree layers. Alpine fir or western red cedar may be regenerating. Representative shrubs are Oregon boxwood, black blueberry and Utah honeysuckle, while typical herbs are grouseberry, white-flowered hawkweed, pine grass and one-sided wintergreen.

Key species are:

no species are unique

(lodgepole pine)
(alpine fir)
(soopolallie)
(Utah honeysuckle)
(grouseberry)
(white-flowered hawkweed)
(pine grass)

GROUPS I AND J GO TO 11a

10b Closed forests of western hemlock and western red cedar often with some Rocky Mountain Douglas-fir, common paper birch, western larch or western white pine. Representative shrubs are Oregon wintergreen, devil's-club and western yew, while typical herbs are rough-fruited fairybells, oak fern, wild sarsaparilla and western wild ginger.

Key species are:

devil's-club
western yew
oak fern
western wild ginger
spiny shield fern

(western hemlock)
(common paper birch)
(Oregon wintergreen)
(red huckleberry)
(Sitka mountain-ash)
(rough-fruited fairybells)
(unifoliate-leaved foamflower)
(wild sarsaparilla)

GROUPS K AND L GO TO 12a

11a Closed lodgepole pine forests at high elevations (above 1200 m) often with some Rocky Mountain Douglas-fir. Often influenced by cold air drainage these sites always have alpine fir and Engelmann spruce regenerating. Representative shrubs are black blueberry and Oregon boxwood, while characteristic herbs are grouseberry, mountain sweetcicely, unifoliate-leaved foamflower and five-leaved creeping raspberry.

Key species are:

alpine fir
Engelmann spruce
twinberry honeysuckle
white-flowered rhododendron
grouseberry
mountain sweetcicely
unifoliate-leaved foamflower
five-leaved creeping raspberry
lupines

(common pink pyrola)

GROUP I

11b Open Rocky Mountain Douglas-fir forests at low elevations (below 1000 m) often with some common paper birch, western larch or western white pine. Western red cedar and western hemlock may be regenerating. Representative shrubs are soopolallie, tall Oregon-grape and western trumpet honeysuckle, while characteristic herbs are rough-leaved rice grass, western bracken and common western pipsissewa.

Key species are:

common paper birch
tall Oregon-grape
rough-leaved rice grass
rough-fruited fairybells

(western hemlock)
(western white pine)
(soopolallie)
(western trumpet honeysuckle)
(western bracken)

GROUP J

12a Open to closed forests of Rocky Mountain Douglas-fir with western red cedar and western hemlock, often with small amounts of common paper birch, western white pine or western larch. Typical shrubs are Rocky Mountain Douglas-fir, common saskatoon, birch-leaved spirea and Oregon wintergreen, while characteristic herbs are white-flowered hawkweed, western bracken, trailflower and white-veined pyrola.

Key species are:

tall Oregon-grape
birch-leaved spirea
Oregon wintergreen
white-veined pyrola

(Rocky Mountain Douglas-fir)
(common paper birch)
(trembling aspen)
(common saskatoon)
(white-flowered hawkweed)
(western bracken)
(trailflower)

GROUP K

12b Closed forests of western hemlock and western red cedar often with some alpine fir. Rocky Mountain Douglas-fir and western white pine may be present in very small amounts. Typical shrubs are black blueberry, red huckleberry and devil's-club, while characteristic herbs are five-leaved creeping raspberry, oak fern and simple-stemmed twistedstalk.

Key species are:

alpine fir
devil's-club
five-leaved creeping raspberry
oak fern
cucumberroot twistedstalk

(red huckleberry)
(simple-stemmed twistedstalk)

GROUP L

13a Open to closed forests of alpine fir and Engelmann spruce, with characteristic shrubs of white-flowered rhododendron, Sitka mountain-ash and twinberry honeysuckle. Frequently occurring herbs are blue-bead clintonia, five-leaved creeping raspberry, oak fern and cucumberroot twistedstalk.

Key species are:

twinberry honeysuckle
large-leaved rattlesnake orchid
one-sided wintergreen
blue-bead clintonia
five-leaved creeping raspberry
oak fern
simple-stemmed twistedstalk
cucumberroot twistedstalk

(Engelmann spruce)
(white-flowered rhododendron)
(Sitka mountain-ash)

GROUP M

13b Alpine tundra, krummholz or patches of alpine fir with interspersed subalpine meadows. Alpine fir is most common as a shrub, other shrubs such as black blueberry and white-flowered rhododendron are rare. Typical herbs are Indian paintbrushes, subalpine fleabane, sedges, western pasqueflower and yellow glacier lily.

Key species are:

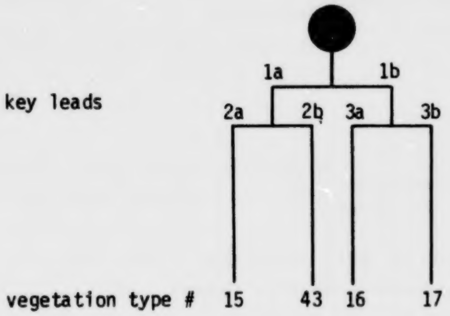
Indian paintbrushes
subalpine buttercup
subalpine fleabane
yellow glacier lily
alpine pussytoes

(sedges)

GROUP N

2.3.2 Key to the Vegetation Types

GROUP A:



1a Grasslands, with ponderosa pine rarely regenerating. Big basin sagebrush and knapweeds may dominate. Shrubs other than sagebrush are rare. Typical herbs present are needle-and-thread grass, Sandberg's blue grass, yellow salsify and Columbia gromwell.

Key species are:

big basin sagebrush
knapweeds
brittle prickly-pear cactus

(needle-and-thread grass)
(great mullein)

GO TO 2a

1b Parkland forests of ponderosa pine with components of Rocky Mountain Douglas-fir. Characteristic shrubs are common juniper, common saskatoon and common snowberry. Typical herbs present are common yarrow, hound's-tongue hawkweed, beardless bluebunch wheat grass and timber milk-vetch.

Key species are:

Rocky Mountain Douglas-fir (tree)
ponderosa pine (tree)
common saskatoon
common juniper
common snowberry

(beardless bluebunch wheat grass)
(timber milk-vetch)
(prairie koelaria)

GO TO 3a

2a No ponderosa pine regenerating, big basin sagebrush may form dominant shrub cover. Knapweeds may be a dominant herb and needle-and-thread grass is always present.

Key species are:

big basin sagebrush
Nuttal's pussytoes
drooping brome grass
needle-and-thread grass
lupines

(beardless bluebunch wheat grass)
(arrow-leaved balsamroot)
(knapweeds)
(brittle prickly-pear cactus)

VEGETATION TYPE 15

Needle-and-thread grass - drooping brome grass - beardless bluebunch wheat grass

2b Ponderosa pine regeneration may be present. Sandberg's blue grass is often the dominant grass, timber milk-vetch and yellow salsify are other common herbs.

Key species are:

field pussytoes
timber milk-vetch
grass-leaved death-camas

(Sandberg's blue grass)
(yellow salsify)

VEGETATION TYPE 43

Sandberg's blue grass - yellow salsify - beardless bluebunch wheat grass

3a Rocky Mountain Douglas-fir and ponderosa pine regeneration is dominant. Sandberg's blue grass, needle-and-thread grass and Columbia gromwell are typical herbs present.

Key species are:

needle-and-thread grass
lupines
great mullein

(field pussytoes)
(yellow salsify)
(Nuttal's pussytoes)
(drooping brome grass)
(Columbia gromwell)
(Holboell's rock cress)

VEGETATION TYPE 16

Ponderosa pine - common snowberry - Sandberg's blue grass - Columbia gromwell

3b Typically occurring shrubs are common snowberry and birch-leaved spirea, while commonly occurring herbs are beardless bluebunch wheat grass, pine grass and arrow-leaved balsamroot.

Key species are:

western chokecherry
birch-leaved spirea
Oregon boxwood
pine grass
strawberries

(arrow-leaved balsamroot)
(hounds-tongue hawkweed)

VEGETATION TYPE 17

Ponderosa pine - common snowberry -
beardless blue bunch wheat grass - common yarrow

GROUP B:

Open lodgepole pine forests on high-elevation south-facing slopes. Alpine fir is usually regenerating in the shrub layers. Characteristic shrubs are common juniper and black blueberry while typical herbs present are pine grass, subalpine fleabane, grouseberry and lupines.

Key species are:

alpine fir
white-flowered rhododendron
lupines
subalpine fleabane

(common juniper)
(black blueberry)
(grouseberry)
(western meadowrue)

VEGETATION TYPE 10

Lodgepole pine - common juniper -
pine grass - subalpine fleabane

GROUP C:

Open trembling aspen forests with occasional Rocky Mountain Douglas-fir. Typical shrubs are willows, common saskatoon, roses and western thimbleberry, while characteristic herbs are clovers, Columbia brome grass, fireweed, western meadowrue, cream-coloured peavine and American vetch.

Key species are:

no species are unique

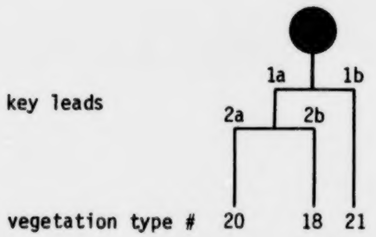
(trembling aspen)
(willows)
(western thimbleberry)
(clovers)
(Columbia brome grass)
(fireweed)
(western meadowrue)
(American vetch)

(cream-coloured peavine)
(common dandelion)

VEGETATION TYPE 27

Trembling aspen - willows -
pine grass - western meadowrue

GROUP D:



1a Closed forests of Rocky Mountain Douglas-fir with rare occurrences of ponderosa pine. Typical shrubs are common snowberry and birch-leaved spirea while representative herbs are fleabanes, racemose pussytoes, pine grass and large-leaved rattlesnake orchid.

Key species are:

field pussytoes
white-flowered hawkweed
common dandelion

(willows)
(racemose pussytoes)
(alders)
(heart-leaved arnica)

GO TO 2a

1b Open forests of Rocky Mountain Douglas-fir with occasional ponderosa pine. Typical shrubs are oceanspray, tall Oregon-grape, and Rocky Mountain maple while representative herbs are false Solomon's-seal, American vetch, showy aster and western fescue.

Key species are:

common paper birch
western red cedar
western chokecherry
oceanspray
western trumpet honeysuckle
Utah honeysuckle
Columbia brome grass
false Solomon's-seal
American vetch

(ponderosa pine)
(Rocky Mountain maple)
(blue wild rye grass)
(western fescue)
(strawberries)
(rough-fruited fairybells)

VEGETATION TYPE 21

Rocky Mountain Douglas-fir - ponderosa pine -
tall Oregon-grape - pine grass

2a Closed forests of Rocky Mountain Douglas-fir, lodgepole pine and ponderosa pine, with the shrubs dominated by Oregon boxwood and birch-leaved spirea. The herb cover is often characterized by a continuous cover of pine grass with racemose pussytoes, showy aster and heart-leaved arnica usually present.

Key species are:

lodgepole pine
birch-leaved spirea
Oregon boxwood
kinnikinnick
hound's-tongue hawkweed
heart-leaved arnica
common yarrow
drooping brome grass
(common saskatoon)
(racemose pussytoes)

VEGETATION TYPE 20

Rocky Mountain Douglas-fir - common saskatoon - pine grass - racemose pussytoes

2b Closed forests of Rocky Mountain Douglas-fir, with a very sparse shrub cover represented by occasional birch-leaved spirea and Rocky Mountain maple. The herb cover is also sparse, limited to patches of pine grass, large-leaved rattlesnake orchid and sedges. A continuous cover of feather moss, step moss and cushion moss is always present.

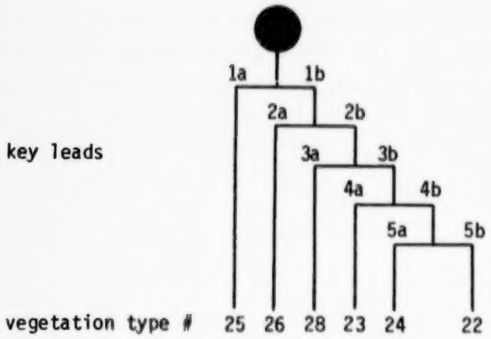
Key species are:

willows
Rocky Mountain maple
twinberry honeysuckle
feather moss
step moss
(large-leaved rattlesnake orchid)
(sedges)
(cushion moss)

VEGETATION TYPE 18

Rocky Mountain Douglas-fir - common snowberry - birch-leaved spirea - pine grass

GROUP E:



1a Closed forests of Rocky Mountain Douglas-fir and lodgepole pine. Characteristic species in the open shrub cover are Oregon boxwood, soopolallie and Sitka mountain-ash. The sparse and diverse herb cover is characterized by showy aster, western meadowrue and mountain sweetcicely.

Key species are:

twinberry honeysuckle
Sitka mountain-ash

(lodgepole pine)
(alpine fir)
(Engelmann spruce)
(one-sided wintergreen)
(green pyrola)
(western meadowrue)
(blue-bead clintonia)

VEGETATION TYPE 25

Lodgepole pine - Oregon boxwood -
showy aster - heart-leaved arnica

1b Closed forests of Rocky Mountain Douglas-fir often with components of common paper birch, lodgepole pine or western larch. Characteristic shrubs are tall Oregon grape, roses and Oregon boxwood, while typical herbs are showy aster, pine grass and common western pipsissewa.

Key species are:

California filbert
spreading dogbane
poverty oat grass
wild sarsaparilla
sedges

(common saskatoon)
(willows)

GO TO 2a

2a Closed forests composed of variable amounts of common paper birch, Rocky Mountain Douglas-fir or lodgepole pine. Characteristic shrubs are soopolallie and California filbert while typical herbs are heart-leaved arnica, western bracken and kinnikinnick.

Key species are:

ponderosa pine
western bracken
Sandberg's blue grass

(common paper birch)
(soopolallie)
(California filbert)
(kinnikinnick)
(heart-leaved arnica)
(spreading dogbane)
(poverty oat grass)
(brome grasses)
(American vetch)

VEGETATION TYPE 26

Rocky Mountain Douglas-fir - common paper birch -
birch-leaved spirea - large-leaved rattlesnake orchid

2b Closed forests of Rocky Mountain Douglas-fir occasionally with large amounts of lodgepole pine or western larch. Characteristic shrubs are tall Oregon-grape, roses, and Oregon boxwood while typical herbs are showy aster, pine grass and common western pipsissewa.

Key species are:

western larch
black blueberry
Utah honeysuckle
red-stemmed pipecleaner

(racemose pussytoes)
(strawberries)
(northern twinflower)

GO TO 3a

3a Closed forests composed of variable amounts of Rocky Mountain Douglas-fir, common paper birch or lodgepole pine. Characteristic shrubs are common snowberry, western thimbleberry and California filbert while typical herbs are blue wild rye grass, western blue clematis and cream-coloured peavine.

Key species are:

trembling aspen
western chokecherry
California filbert
Columbia brome grass
blue wild rye grass

(common paper birch)
(common snowberry)
(western thimbleberry)
(cream-coloured peavine)

western blue clematis
poverty oat grass
rough-leaved rice grass
western meadowrue
mountain sweetcicely
star-flowered false Solomon's-seal
trailflower
bedstraws

VEGETATION TYPE 28

Rocky Mountain Douglas-fir - tall Oregon-grape - pine grass - mountain sweetcicely

3b Closed forests of either Rocky Mountain Douglas-fir or lodgepole pine. Characteristic shrubs are Oregon boxwood and birch-leaved spirea, while typical herbs are showy aster, pine grass and common western pipsissewa.

Key species are:

willows
black blueberry
heart-leaved arnica

(western red cedar)
(Utah honeysuckle)
(Columbia lily)
(racemose pussytoes)

GO TO 4a

4a Closed lodgepole pine forests occasionally mixed with Rocky Mountain Douglas-fir and western larch. Characteristic shrubs are soopolallie and common juniper. Representative herbs are spreading dogbane, false Solomon's-seal and common pink pyrola.

Key species are:

common paper birch
common juniper
spreading dogbane
common pink pyrola

(lodgepole pine)
(soopolallie)
(common snowberry)

VEGETATION TYPE 23

Lodgepole pine - soopolallie - pine grass - showy aster

4b Closed Rocky Mountain Douglas-fir forests, with characteristic shrubs of birch-leaved spirea and Oregon boxwood. Representative herbs are racemose pussytoes, showy aster, pine grass and strawberries.

Key species are:

trembling aspen
strawberries
large-leaved rattlesnake orchid
(Rocky Mountain Douglas-fir)
(birch-leaved spirea)
(white-flowered hawkweed)
(racemose pussytoes)

GO TO 5a

5a Open forests of Rocky Mountain Douglas-fir with occasional lodgepole pine. The open shrub cover is composed of western trumpet honeysuckle, western thimbleberry, roses and Utah honeysuckle. The herbs are characterized by heart-leaved arnica, rough-fruited fairybells, white-flowered hawkweed and northern twinflower.

Key species are:

soopolallie
oceanspray
western trumpet honeysuckle
western thimbleberry
western red cedar
fireweed
heart-leaved arnica
rough-fruited fairybells
white-veined pyrola
sedges
(black blueberry)
(Utah honeysuckle)
(white-flowered hawkweed)
(northern twinflower)
(one-sided wintergreen)

VEGETATION TYPE 24

Rocky Mountain Douglas-fir - roses -
pine grass - white-flowered hawkweed

5b Open to closed forests of Rocky Mountain Douglas-fir with a sparse shrub layer characterized by birch-leaved spirea and willows. The herb layer is characterized by Indian paintbrushes, cream-coloured peavine and violets.

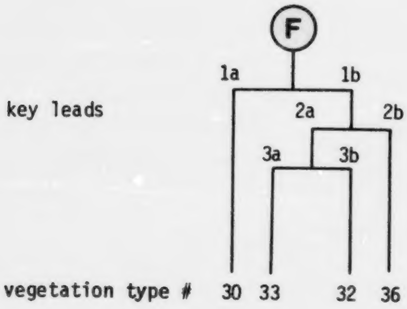
Key species are:

western larch
sickle-top lousewort
violets
cream-coloured peavine
Indian paintbrushes

VEGETATION TYPE 22

Rocky Mountain Douglas-fir - birch-leaved
spirea - pine grass - showy aster

GROUP F:



1a Closed forests of Rocky Mountain Douglas-fir often mixed with lodgpole pine, western red cedar or alpine fir. Soopolallie is the only characteristic shrub, while typical herbs are pine grass, mountain sweetcicely and one-sided wintergreen.

Key species are:

alpine fir	(lodgepole pine)
violets	(soopolallie)
common pink pyrola	(pine grass)
	(mountain sweetcicely)
	(green pyrola)

VEGETATION TYPE 30

Rocky Mountain Douglas-fir - soopolallie -
Oregon boxwood - common western pipsissewa

1b Closed forests of Rocky Mountain Douglas-fir and common paper birch. Typical shrubs are birch-leaved spirea, Oregon boxwood and western red cedar, while characteristic herbs are rough-fruited fairybells, common western pipsissewa and large-leaved rattlesnake orchid.

Key species are:

Columbia lily	(common paper birch)
	(willows)
	(western hemlock)
	(Rocky Mountain maple)
	(Utah honeysuckle)
	(rough-fruited fairybells)
	(blue-bead clintonia)

GO TO 2a

2a Closed forests of Rocky Mountain Douglas-fir and western red cedar, often with some common paper birch and white spruce. Characteristic shrubs are Rocky Mountain maple, Oregon boxwood and western red cedar while typical herbs are rough-fruited fairybells, common western pipsissewa and one-sided wintergreen.

Key species are:

western hemlock (regeneration)	(Rocky Mountain Douglas-fir)
western larch	(Rocky Mountain maple)
western yew	(western white pine)
soopolallie	
western trumpet honeysuckle	
Columbia lily	
white-flowered hawkweed	
false Solomon's-seal	

GO TO 3a

2b Closed forests of Rocky Mountain Douglas-fir and common paper birch. Characteristic shrubs are western red cedar, white spruce and western thimbleberry while typical herbs are blue-bead clintonia, green pyrola and trailflower.

Key species are:

fireweed	(western thimbleberry)
green pyrola	(white spruce)
trailflower	

VEGETATION TYPE 36

Common paper birch - willows -
Oregon boxwood - blue-bead clintonia

3a Closed forests of Rocky Mountain Douglas-fir, western red cedar and comon paper birch often with components of lodgepole pine and white spruce. Characteristic shrubs are common snowberry, western trumpet honeysuckle and willows. Typical herbs are showy aster, heart-leaved arnica and pine grass.

Key species are:

lodgepole pine	(willows)
common snowberry	(western trumpet honeysuckle)
heart-leaved arnica	(showy aster)
pine grass	
unifoliate-leaved foamflower	

VEGETATION TYPE 33

Western red cedar - western thimbleberry - birch-leaved spirea - large-leaved rattlesnake orchid

3b Open to closed forests of Rocky Mountain Douglas-fir and common paper birch. Characteristic shrubs are Utah honeysuckle, western thimbleberry, western yew and common saskatoon. Typical herbs are false Solomon's-seal, wild sarsaparilla and one-sided wintergreen.

Key species are:

- western larch
- western hemlock
- western yew
- common saskatoon
- western white pine
- western thimbleberry
- Utah honeysuckle
- false Solomon's-seal
- green-veined pyrola
- wild sarsaparilla

VEGETATION TYPE 32

Common paper birch - western red cedar - Rocky Mountain maple - rough-fruited fairybells

GROUP G:

Open lodgepole pine forests often with some regenerating Rocky Mountain Douglas-fir. Representative shrubs are common juniper, Oregon boxwood and birch-leaved spirea, while frequently occurring herbs are kinnikinnick, pine grass and strawberries.

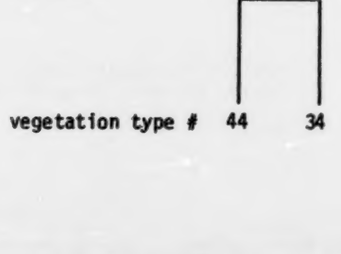
Key species are:

- grouseberry
- (lodgepole pine)
- (alders)
- (common juniper)
- (kinnikinnick)
- (field pussytoes)
- (common yarrow)

VEGETATION TYPE 19

Lodgepole pine - alpine fir - black blueberry - blue-bead clintonia

GROUP H:



1a Moist to wet logged sites with occasional regenerating western hemlock and patchy shrub and herb cover. Characteristic shrubs are black blueberry and American red elder, while typical herbs are unifoliate-leaved foamflower, five-leaved creeping raspberry and cucumberroot twistedstalk.

Key species are:

western hemlock (regeneration)
black blueberry
currants
American red elder
unifoliate-leaved foamflower
five-leaved creeping raspberry
cucumberroot twistedstalk
spiny shield fern

VEGETATION TYPE 44

Western thimbleberry - fireweed - oak fern

1b Dry to moist logged sites with occasional regenerating Rocky Mountain Douglas-fir and patchy shrub and herb cover. Characteristic shrubs are common snowberry, tall Oregon-grape and Oregon boxwood, while typical herbs are Columbia lily, white-flowered hawkweed, western fescue and pearly everlasting.

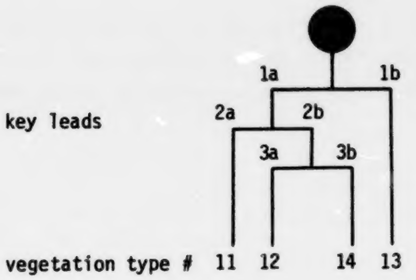
Key species are:

Rocky Mountain Douglas-fir (regeneration)
common snowberry
tall Oregon-grape
trembling aspen
Columbia lily
white-flowered hawkweed
spreading dogbane
western fescue
common pink pyrola
pearly everlasting
yellow salsify
great mullein
(willows)
(Oregon boxwood)

VEGETATION TYPE 34

Trembling aspen - fireweed - Canadian bunchberry

GROUP I:



1a Closed lodgepole pine forests with alpine fir and Engelmann spruce regenerating. Typical shrubs are black blueberry, Oregon boxwood and alpine fir, while representative herbs are common western pipsissewa and one-sided wintergreen.

Key species are:
- alders
- Utah honeysuckle
- Sitka mountain-ash
- grouseberry
- Columbia lily
- white-flowered hawkweed
- pine grass
- common pink pyrola
- violets
- (lodgepole pine)
- (willows)

GO TO 2a

1b Closed forests of Rocky Mountain Douglas-fir, alpine fir and Engelmann spruce. Typical shrubs are Rocky Mountain maple and devil's-club, while representative herbs are star-flowered false Solomon's-seal, bedstraws and simple-stemmed twistedstalk.

Key species are:
- Rocky Mountain maple
- devil's-club
- star-flowered false Solomon's-seal
- bedstraws
- (alpine fir - trees)
- (Engelmann spruce - trees)
- (Rocky Mountain Douglas-fir)
- (simple-stemmed twistedstalk)

VEGETATION TYPE 13

Rocky Mountain Douglas-fir - alpine fir
- Oregon boxwood - Canadian bunchberry

2a Closed lodgepole pine forests often with a component of alpine fir and Engelmann spruce. Representative shrubs are alders, western thimbleberry, white-flowered rhododendron and currants, while typical herbs are heart-leaved arnica, showy aster and western meadowrue.

Key species are:

- common paper birch
- currants
- fireweed
- heart-leaved arnica
- showy aster
- western meadowrue
- broad-leaved arnica
- star-flowered false Solomon's-seal
- (alders)
- (western thimbleberry)
- (white-flowered rhododendron)
- (sickle-top lousewort)
- (Columbia lily)

VEGETATION TYPE 11

Lodgepole pine - alpine fir - black blueberry - blue-bead clintonia

2b Closed lodgepole pine forests often with a component of western hemlock and western red cedar. Representative shrubs are Oregon boxwood, black blueberry and Sitka mountain-ash, while typical herbs are one-sided wintergreen and northern twinflower.

Key species are:

- western white pine
- western hemlock
- western red cedar
- (Sitka mountain-ash)
- (false Solomon's-seal)
- (northern twinflower)
- (common pink pyrola)

GO TO 3a

3a Closed forests of lodgepole pine often with a component of alpine fir. Characteristic shrubs are Utah honeysuckle and twinberry honeysuckle, while typical herbs are grouseberry and pine grass.

Key species are:

This type is characterized by the absence of species which are diagnostic for vegetation type 14 (lead 3b)

- (twinberry honeysuckle)
- (grouseberry)
- (pine grass)

VEGETATION TYPE 12

Lodgepole pine - alpine fir - grouseberry - violets

3b Open forests composed of variable amounts of lodgepole pine, Rocky Mountain Douglas-fir, alpine fir and western red cedar. Characteristic shrubs are alders, currants and Sitka mountain-ash, while typical herbs are false Solomon's-seal, large-leaved rattlesnake orchid, blue-bead clintonia and common pink pyrola.

Key species are:

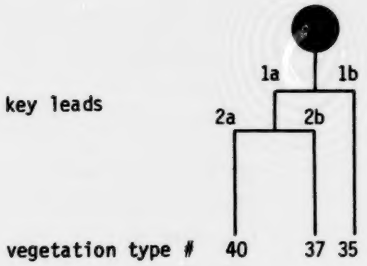
western white pine
western hemlock
western red cedar
alders
currants
Sitka mountain-ash
false Solomon's-seal
unifoliate-leaved foamflower
five-leaved creeping raspberry

(large-leaved rattlesnake orchid)
(common pink pyrola)
(blue-bead clintonia)

VEGETATION TYPE 14

Lodgepole pine - alpine fir - Oregon boxwood - one-sided wintergreen

GROUP J:



1a Open forests of Rocky Mountain Douglas-fir and common paper birch, with occasional western red cedar. Characteristic shrubs are Oregon boxwood, black blueberry and western red cedar, while typical herbs are common western pipsissewa, northern twinflower and large-leaved rattlesnake orchid.

Key species are:

trembling aspen
rough-fruited fairybells

(common paper birch - trees)
(western red cedar - trees)
(Rocky Mountain maple)
(western trumpet honeysuckle)
(western hemlock - regeneration)
(red huckleberry)
(Canadian bunchberry)

GO TO 2a

1b Open forests of Rocky Mountain Douglas-fir often mixed with lodgepole pine and western larch. Characteristic shrubs are common saskatoon, willows and Rocky Mountain maple, while typical herbs are Columbia lily, western fescue and kinnikinnick.

Key species are:

lodgepole pine	(Rocky Mountain maple)
willows	(kinnikinnick)
common saskatoon	(false Solomon's-seal)
Oregon wintergreen	
Columbia lily	
western fescue	

VEGETATION TYPE 35

Western larch - western red cedar -
soopolallie - northern twinflower

2a Open forests of Rocky Mountain Douglas-fir, western white pine and common paper birch. Typical shrubs are red huckleberry, Utah honeysuckle and soopolallie, while characteristic herbs are pine grass, blue-bead clintonia and wild sarsaparilla.

Key species are:

California filbert
western hemlock (regeneration)
roses
red huckleberry
pine grass
showy aster
wild sarsaparilla

VEGETATION TYPE 40

Rocky Mountain Douglas-fir - western red
cedar - Oregon boxwood - western bracken

2b Open to closed forests of Rocky Mountain Douglas-fir and western larch, often mixed with western red cedar and western white pine. Typical shrubs are western thimbleberry, tall Oregon-grape and Rocky Mountain maple, while characteristic herbs are kinnikinnick and false Solomon's-seal.

Key species are:

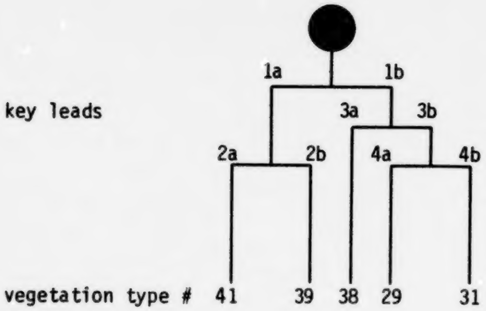
western larch
tall Oregon-grape
western thimbleberry
trembling aspen

Rocky Mountain maple
kinnikinnick
false Solomon's-seal

VEGETATION TYPE 37

Western larch - western red cedar - Oregon boxwood - common western pipsissewa

GROUP K:



1a Closed forests of Rocky Mountain Douglas-fir, common paper birch, western red cedar and western hemlock. Representative shrubs are roses, western thimbleberry and Rocky Mountain maple, while characteristic herbs are white-flowered hawkweed, western fescue, rough-fruited fairybells and blue-bead clintonia.

Key species are:

alders
California filbert
western fescue
strawberries
wild sarsaparilla

(trembling aspen)
(common paper birch - shrub)
(soopolallie)
(common saskatoon)
(common snowberry)
(western thimbleberry)
(Rocky Mountain maple)
(Utah honeysuckle)
(white-flowered hawkweed)
(showy aster)
(rough-fruited fairybells)
(western bracken)
(western wild ginger)

GO TO 2a

1b Closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar. Representative shrubs are Oregon boxwood, Oregon wintergreen and western yew, while characteristic herbs are large-leaved rattlesnake orchid, violets, common western pipsissewa and blue-bead clintonia.

Key species are:

Oregon wintergreen	(western hemlock - trees)
western yew	(western white pine)
	(violets)
	(star-flowered false Solomon's-seal)

GO TO 3a

2a Open to closed forests of common paper birch often mixed with Rocky Mountain Douglas-fir and western red cedar. Typical shrubs are soopolallie, California filbert, western trumpet honeysuckle and common snowberry, while representative herbs are showy aster, Columbia lily and false Solomon's-seal.

Key species are:

western larch
Rocky Mountain Douglas-fir (regeneration)
soopolallie
California filbert
western trumpet honeysuckle
common snowberry
Columbia lily
showy aster
strawberries
false Solomon's-seal
green pyrola
simple-stemmed twistedstalk

VEGETATION TYPE 41

Common paper birch - western red cedar
- western thimbleberry - trailflower

2b Closed forests of Rocky Mountain Douglas-fir, western red cedar, western white pine and western hemlock. Typical shrubs are black blueberry and Sitka mountain-ash, while representative herbs are poverty oat grass, bracted lousewort and western wild ginger.

Key species are:

grouseberry
poverty oat grass
bracted lousewort
(western hemlock)
(black blueberry)
(Sitka mountain-ash)

VEGETATION TYPE 39

Rocky Mountain Douglas-fir - western hemlock
- black blueberry - rough-fruited fairybells

3a Closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar often mixed with western white pine and common paper birch. Characteristic shrubs are soopolallie, common saskatoon, Rocky Mountain maple and common snowberry, while typical herbs are kinnikinnick, showy aster, western bracken and Columbia lily.

Key species are:

soopolallie
common saskatoon
common snowberry
Rocky Mountain maple
Columbia lily
kinnikinnick
showy aster
western bracken
western meadowrue
simple-stemmed twistedstalk
trailflower
western wild ginger
(western trumpet honeysuckle)
(birch-leaved spirea)
(western thimbleberry)
(twinberry honeysuckle)
(western yew)
(white-flowered hawkweed)

VEGETATION TYPE 38

Rocky Mountain Douglas-fir - western hemlock -
birch-leaved spirea - northern twinflower

3b Closed forests of Rocky Mountain Douglas-fir, western hemlock, western red cedar and western white pine. Characteristic shrubs are Oregon boxwood, black blueberry and western red cedar, while typical herbs are large-leaved rattlesnake orchid, green pyrola and false Solomon's-seal.

Key species are:

Rocky Mountain maple
false Solomon's-seal
green pyrola
(star-flowered false Solomon's-seal)

GO TO 4a

4a Closed forests of Rocky Mountain Douglas-fir, western hemlock and western red cedar, often mixed with western white pine and common paper birch. Representative shrubs are tall Oregon-grape, Rocky Mountain maple and birch-leaved spirea, while typical herbs are false Solomon's-seal.

Key species are:

western trumpet honeysuckle
tall Oregon-grape
birch-leaved spirea
Rocky Mountain maple
star-flowered false Solomon's-seal
spiny shield fern

(false Solomon's-seal)

VEGETATION TYPE 29

Rocky Mountain Douglas-fir - western hemlock
- Oregon boxwood - one-sided wintergreen

4b Open to closed forests of Rocky Mountain Douglas-fir, often mixed with western hemlock, western red cedar and western white pine. Representative shrubs are Utah honeysuckle and black blueberry while typical herbs are white-veined pyrola, common pink pyrola and northern twinflower.

Key species are:

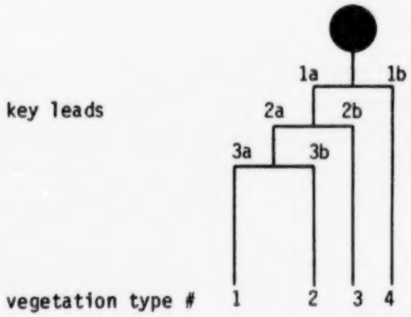
Utah honeysuckle
white-veined pyrola

(western white pine)
(northern twinflower)
(common pink pyrola)
(green pyrola)
(Canadian bunchberry)

VEGETATION TYPE 31

Rocky Mountain Douglas-fir - western hemlock
- black blueberry - blue-bead clintonia

GROUP L:



1a Closed forests of western hemlock and western red cedar often dominated by western hemlock. (alpine fir and Engelmann spruce may be present). Representative shrubs are black blueberry and Oregon boxwood, while characteristic herbs are common western pipsissewa, northern twinflower, blue-bead clintonia and unifoliate-leaved foamflower.

Key species are:

common western pipsissewa

(western white pine)
(Oregon boxwood)
(black blueberry)
(western hemlock)
(large-leaved rattlesnake orchid)
(one-sided wintergreen)
(common pink pyrola)

GO TO 2a

1b Closed forests of western hemlock and western red cedar, often mixed with alpine fir and Engelmann spruce. Representative shrubs are American red elder, devil's-club and western thimbleberry, while characteristic herbs are western wild ginger, common lady-fern and red baneberry.

Key species are:

American red elder
western wild ginger
common lady fern
red baneberry

(western thimbleberry)
(Rocky Mountain maple)
(devil's-club)
(mountain sweetcicely)
(bedstraws)
(cucumberroot twistedstalk)
(spiny shield fern)

VEGETATION TYPE 4

Western hemlock - western red cedar -
devil's-club - common lady fern

2a Closed forests of western hemlock and western red cedar often without alpine fir and Engelmann spruce in the tree canopy. Characteristic shrubs are red huckleberry and western yew, while typical herbs are rough-fruited fairybells, blue-bead clintonia and unifoliate-leaved foamflower.

Key species are:

red huckleberry

(Rocky Mountain Douglas-fir)
(Utah honeysuckle)
(western yew)
(rough-fruited fairybells)

GO TO 3a

2b Closed forests composed of variable amounts of western red cedar, western hemlock, Engelmann spruce and alpine fir. Characteristic shrubs are western thimbleberry, Sitka mountain-ash and currants, while typical herbs are heart-leaved twayblade, green false hellebore and simple-stemmed twistedstalk.

Key species are:

heart-leaved twayblade
star-flowered false Solomon's-seal
green false hellebore

(alpine fir)
(Engelmann spruce)
(western thimbleberry)
(Sitka mountain-ash)
(currants)
(white-flowered rhododendron)
(simple-stemmed twistedstalk)
(Sitka valerian)

VEGETATION TYPE 3

Western hemlock - alpine fir - black
bluebery - blue-bead clintonia

3a Closed forests of western hemlock and western red cedar, dominated by western hemlock. Rocky Mountain Douglas-fir and western white pine may be present. Typical shrubs are Utah honeysuckle and western yew, while characteristic herbs are western bracken, wild sarsaparilla and northern twinflower.

Key species are:

roses
western bracken
wild sarsaparilla

(western white pine)
(Utah honeysuckle)
(Sitka mountain-ash)
(red huckleberry)
(northern twinflower)

VEGETATION TYPE 1

Western hemlock - western red cedar -
western yew - blue-bead clintonia

3b Closed forests of western hemlock and western red cedar, often mixed with Rocky Mountain Douglas-fir and alpine fir. Typical shrubs are devil's-club and rusty Pacific menziesia, while characteristic herbs are cucumberroot twistedstalk, unifoliate-leaved foamflower and oak fern.

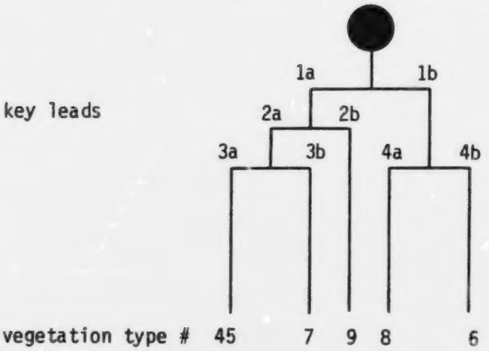
Key species are:

- devil's-club
- rusty Pacific menziesia
- cucumberroot twistedstalk
- (alpine fir)
- (Engelmann spruce)
- (false Solomon's-seal)
- (rough-fruited fairybells)
- (unifoliate-leaved foamflower)
- (oak fern)

VEGETATION TYPE 2

Western hemlock - western red cedar -
unifoliate-leaved foamflower - oak fern

GROUP M:



1a Open forests of alpine fir and Engelmann spruce, with Engelmann spruce often dominant, and logged subalpine sites. Typical shrubs are twinberry honeysuckle, Utah honeysuckle and white-flowered rhododendron, while characteristic herbs are bracted lousewort, mountain sweetcicely, unifoliate-leaved foamflower, and oak fern.

Key species are:

- alders
- western thimbleberry
- Utah honeysuckle
- mountain sweetcicely
- smooth woodrush
- (American red elder)
- (western meadowrue)
- (oak fern)
- (simple-stemmed twistedstalk)

GO TO 2a

1b Open to closed forests of alpine fir and Engelmann spruce, with alpine fir often dominant. Typical shrubs are black blueberry, white-flowered rhododendron and Sitka mountain-ash, while characteristic herbs are one-sided wintergreen, large-leaved rattlesnake orchid, blue-bead clintonia and Sitka valerian.

Key species are:

grouseberry

(Sitka mountain-ash)
(large-leaved rattlesnake orchid)
(one-sided wintergreen)
(lupines)

GO TO 4a

2a Open forests of alpine fir and Engelmann spruce, and open subalpine logged areas lacking trees. Characteristic shrubs are oval-leaved blueberry and currants. Typical herbs are fireweed, bracted lousewort, western meadowrue and green false hellebore.

Key species are:

oval-leaved blueberry
bracted lousewort
heart-leaved twayblade

(fireweed)
(green false hellebore)
(arrow-leaved ragwort)

GO TO 3a

2b Open forests of alpine fir and Engelmann spruce. Characteristic shrubs are Oregon boxwood, alders and Sitka mountain-ash. Typical herbs are blue-bead clintonia, one-sided wintergreen and common lady fern.

Key species are:

red baneberry
Oregon boxwood
western red cedar
alders

(Sitka mountain-ash)
(false Solomon's-seal)
(large-leaved rattlesnake orchid)
(one-sided wintergreen)
(blue-bead clintonia)
(common lady fern)

VEGETATION TYPE 9

Alpine fir - Sitka mountain-ash -
blue-bead clintonia - oak fern

3a Logged subalpine sites with regenerating alpine fir and Engelmann spruce. Representative shrubs are western thimbleberry, Sitka mountain-ash and American red elder, while characteristic herbs are common lady fern, fireweed and common dandelion.

Key species are:

western thimbleberry
common lady fern
common dandelion

(Sitka mountain-ash)
(American red elder)
(fireweed)
(false Solomon's-seal)
(mountain sweetcicely)
(blue-bead clintonia)

(cucumberroot twistedstalk)
(arrow-leaved ragwort)

VEGETATION TYPE 45

Black blueberry - Sitka valerian - green false hellebore - oak fern

3b Open forests of alpine fir and Engelmann spruce. Representative shrubs are twinberry honeysuckle and white-flowered rhododendron, while characteristic herbs are one-sided wintergreen, smooth woodrush and heart-leaved twayblade.

Key species are:

one-sided wintergreen
large-leaved rattlesnake orchid
five-stamened mitrewort
smooth woodrush
heart-leaved twayblade
cow parsnip
(twinberry honeysuckle)
(white-flowered rhododendron)
(simple-stemmed twistedstalk)

VEGETATION TYPE 7

Alpine fir - white-flowered rhododendron - black blueberry - Sitka valerian

4a Closed forests of alpine fir and Engelmann spruce. Typical shrubs are Oregon boxwood, oval-leaved blueberry and red huckleberry, while characteristic herbs are western meadowrue, large-leaved rattlesnake orchid and oak fern.

Key species are:

Oregon boxwood
oval-leaved blueberry
currants
red huckleberry
western meadowrue
oak fern
simple-stemmed twistedstalk
heart-leaved twayblade
(fireweed)
(large-leaved rattlesnake orchid)
(blue-bead clintonia)
(unifoliate-leaved foamflower)
(green false hellebore)

VEGETATION TYPE 8

Alpine fir - white-flowered rhododendron - five-leaved creeping raspberry - Sitka valerian

4b Open forests of alpine fir and Engelmann spruce. There are no typical shrubs, while characteristic herbs are grouseberry, broad-leaved arnica and Canadian bunchberry.

Key species are:

grouseberry
pine grass
Canadian bunchberry

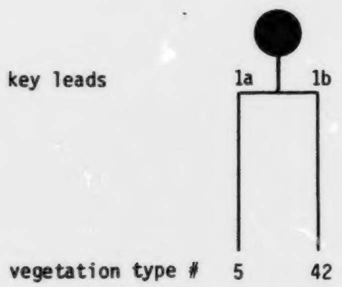
(broad-leaved arnica)

This vegetation type is also characterized by the absence of species diagnostic to vegetation type 8 (lead 4a).

VEGETATION TYPE 6

Alpine fir - black blueberry - grouseberry - broad-leaved arnica

GROUP II:



1a Parkland forests of alpine fir and Engelmann spruce intermixed with herbacious meadows. Shrubs are generally lacking, while characteristic herbs are bracted lousewort, green false hellebore and arrow-leaved ragwort.

Key species are:

Engelmann spruce (trees)
Sitka mountain-ash

(alpine fir - trees)
(black blueberry)
(white-flowered rhododendron)
(bracted lousewort)
(arrow-leaved ragwort)

VEGETATION TYPE 5

Alpine fir - bracted lousewort - broad-leaved arnica - Sitka valerian

1b Alpine fir and Engelmann spruce are not present as trees and occur as krummholz forms in patches. Shrubs are generally lacking, while characteristic herbs are alpine pussytoes, red mountain-heather, yellow glacier lily and western pasqueflower.

Key species are:

alpine pussytoes

(western pasqueflower)
(yellow glacier lily)
(red mountain-heather)
(blue grasses)
(luetkia)

VEGETATION TYPE 42

Alpine fir - subalpine fleabane - sedges - smooth woodrush

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appendix A

LIST OF PLANT SPECIES

A. LIST OF PLANT SPECIES

The plant species in this list were recorded in one or more plots in the study area. Other species may occur.

Plants marked with an asterisk were used in the analysis.

Trees, shrubs and herbs are named according to Taylor and MacBryde (1977). Botanical names for mosses are after Crum, Steere and Anderson (1973). Some of the common names for mosses have been standardized within the Vegetation Unit of the Terrestrial Studies Branch.

Common Name	**Botanical Name**
Trees	
*alpine fir	Abies lasiocarpa
black cottonwood	Populus balsamifera subsp. trichocarpa
*common paper birch	Betula papyrifera
*Englemann spruce	Picea engelmannii
*lodgepole pine	Pinus contorta
*ponderosa pine	Pinus ponderosa
*Rocky Mountain Douglas-fir	Pseudotsuga menziesii
*trembling aspen	Populus tremuloides
*western hemlock	Tsuga heterophylla
*western larch	Larix occidentalis
*western red cedar	Thuja plicata
*western white pine	Pinus monticola
white spruce	Picea glauca
Shrubs	
*alders[1]	Alnus spp.
*American red elder	Sambucus racemosa
*American red raspberry	Rubus idaeus
baldhip rose	Rosa gymnocarpa
big basin sagebrush	Artemisia tridentata subsp. tridentata
*birch-leaved spirea	Spiraea betulifolia subsp. lucida
*black blueberry	Vaccinium membranaceum
black hawthorn	Crataegus douglasii
black swamp gooseberry	Ribes lacustre
*California filbert	Corylus cornuta var. californica
*choke cherry	Prunus virginiana
*common juniper	Juniperus communis
common Labrador tea	Ledum groenlandicum
*common saskatoon	Amelanchier alnifolia
*common snowberry	Symphoricarpos albus
*currants[1]	Ribes spp.
*devil's-club	Oplopanax horridus
hardhack	Spiraea douglasii
high bush cranberry	Viburnum edule
Lewis' mock-orange	Philadelphus lewisii
mallow ninebark	Physocarpus malvaceus
northern black currant	Ribes hudsonianum
*oceanspray	Holodiscus discolor
*Oregon boxwood	Paxistima myrsinites
*oval-leaved blueberry	Vaccinium ovalifolium
prickly rose	Rosa acicularis
rabbitbrush	Chrysothamnus nauseosus

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[1] All species of this genus in the study area are grouped.

Shurbs (Continued)

*red huckleberry	Vaccinium parvifolium
red-osier dogwood	Cornus sericea
redstem ceanothus	Ceanothus sanguineus
Rocky Mountain juniper	Juniperus scopulorum
*Rocky Mountain maple	Acer glabrum
*roses[1]	Rosa spp.
*rusty Pacific menziesia	Menziesii ferruginea subsp. ferruginea
Sitka mountain alder	Alnus viridis subsp. sitchensis
*Sitka mountain-ash	Sorbus sitchensis
soopolallie	Shepherdia canadensis
*tall Oregon-grape	Mahonia aquifolium
thin-leaved mountain alder	Alnus incana subsp. tenuifolia
three-tip sagebrush	Artemisia tripartita
*twinberry honeysuckle	Lonicera involucrata
*Utah honeysuckle	Lonicera utahensis
western birch	Betula occidentalis
*western thimbleberry	Rubus parviflorus
western swamp kalmia	Kalmia microphylla
*western yew	Taxus brevifolia
*white-flowered rhododendron	Rhododendron albiflorum
*willows[1]	Salix spp.

Herbs

Alaska onion grass	Melica subulata
*Alaska rein-orchid	Platanthera unalascensis
Alaska saxifrage	Saxifraga ferruginea
Alberta penstemon	Penstemon albertinus
alpine club-moss	Lycopodium alpinium
*alpine pussytoes	Antennaria alpina
alpine sandwort	Minuartia obtusiloba
alpine speedwell	Veronica wormskjoldii
alpine timothy	Phleum alpinum
American skunk cabbage	Lysichiton americanum
American stinging nettle	Urtica dioica subsp. gracilis
*American vetch	Vicia americana
angelicas	Angelica spp.
Arctic colt's-foot	Petasites frigidus
Arctic lupine	Lupinus arcticus
*arrow-leaved balsamroot	Balsamorhiza sagittata
*arrow-leaved ragwort	Senecio triangularis
*asters[2]	Aster spp.
beaked sedge	Carex rostrata
*beardless bluebunch wheat grass	Agropyron spicatum subsp. inerme
bent grasses	Agrostis spp.
big-leaved lupine	Lupinus polyphyllus
bitterroot lewisia	Lewisia rediviva
black crowberry	Empetrum nigrum
*blue grasses[3]	Poa spp.
*blue-bead clintonia	Clintonia uniflora
blue-eyed grasses	Sisyrinchium spp.
*blue-leaved wild strawberry	Fragaria virginiana subsp. glauca
*blue wild rye grass	Elymus glauca
bog cranberry	Vaccinium oxycoccus
*bracted lousewort	Pedicularis bracteosa
brittle prickly-pear cactus	Opuntia fragilis
*broad-leaved arnica	Arnica latifolia
*broad-leaved twayblade	Listera convallarioides

[1] All species of this genus in the study area are grouped.

[2] All aster species within the study area, other than showy aster, have been grouped together.

[3] All blue grass species within the study area, other than Sandberg's blue grass, have been grouped together. Most frequently occurring are Kentucky blue grass, inland blue grass and high-elevation blue grasses.

Herbs (Continued)

*brome grasses[1]	Bromus spp.
brown-eyed Susan	Gaillardia aristata
buckbean	Menyanthes trifoliata
buttercups	Ranunculus spp.
California oat grass	Danthonia californica
Canada milk-vetch	Astragulus canadensis
Canada violet	Viola canadensis
*Canadian bunchberry	Cornus canadensis
Canadian goldenrod	Solidago canadensis
chickweeds	Cerastium spp.
chocolate lily	Fritillaria lanceolata
clasping arnica	Arnica amplexicaulis
*clovers[2]	Trifolium spp.
cockleburs	Xanthium spp.
*Columbia brome grass	Bromus vulgaris
*Columbia gromwell	Lithospermum ruderale
*Columbia lily	Lilium columbianum
Columbia mugwort	Artemisia lindleyana
Columbian monkshood	Aconitum columbianum
columbines	Aquilegia spp.
common butterwort	Pinguicula vulgaris
*common dandelion	Taraxacum officinale
common harebell	Campanula rotundifolia
*common lady fern	Athyrium filix-femina
*common pink pyrola	Pyrola asarifolia
common red Indian paintbrush	Castilleja miniata
common selaginella	Selaginella densa
common self-heal	Prunella vulgaris
*common western pipsissewa	Chimaphila umbellata subsp. occidentalis
*common yarrow	Achillea millefolium
cotton-grasses	Eriophorum spp.
*cow-parsnip	Heracleum sphondylium
*cream-coloured peavine	Lathyrus ochroleucus
creeping snowberry	Gaultheria hispidula
crested shield fern	Dryopteris cristata
cucumberroot twistedstalk	Streptopus amplexifolius
Cusick's blue grass	Poa cusickii
diffuse knapweed	Centaurea diffusa
docks	Rumex spp.
Douglas' aster	Aster subspicatus
Douglas' water-hemlock	Cicuta douglasii
*drooping brome grass	Bromus tectorum
dropseeds	Sporobulus spp.
dwarf blueberry	Vaccinium caespitosum
dwarf red blackberry	Rubus pubescens
early blue violet	Viola adunca
enchanter's nightshade	Circaea alpina
elephant's-head lousewort	Pedicularis groenlandica
fairyslipper	Calypso bulbosa
false dandelions	Agoseris spp.
*false Solomon's-seal	Smilacina racemosa
fern-leaved lomatium	Lomatium dissectum
field mint	Mentha arvensis
*field pussytoes	Antennaria neglecta
fine-leaved fleabane	Erigeron linearis
*fireweed	Epilobium angustifolium
*five-leaved creeping raspberry	Rubus pedatus
*five-stamened mitrewort	Mitella pentendra

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[1] All brome grasses within the study area, other than drooping brome grass and Columbia brome grass, have been grouped together.

[2] All species of this genus in the study area are grouped.

Herbs (Continued)

*fleabanes[1]	Erigeron spp.
fringed grass-of-parnassus	Parnassia fimbriata
garden asparagus	Asparagus officinalis
graceful cinquefoil	Potentilla gracilis
*grass-leaved death-camas	Zigadenus venenosus
*great mullein	Verbascum thapsus
*green false hellebore	Veratrum viride
*green pyrola	Pyrola chlorantha
green-flowered alumroot	Heuchera chlorantha
green-flowered rein-orchid	Platanthera hyperborea
*grouseberry	Vaccinium scoparium
hairy golden-aster	Heterotheca villosa
*heart-leaved arnica	Arnica cordifolia
*heart-leaved twayblade	Listera cordata
hemlock water-parsnip	Sium suave
*Holboell's rock-cress	Arabis holboellii
*hound's-tongue hawkweed	Hieracium cynoglossoides
Idaho bent grass	Agrostis idahoensis
*Idaho fescue	Festuca idahoensis
*Indian paintbrushes[2]	Castilleja spp.
inland blue grass	Poa interior
interior small bedstraw	Galium trifidum
Kentucky blue grass	Poa pratensis
*kinnikinnick	Arctostaphylos uva-ursi
knapweeds	Centaurea spp.
knotweeds	Polygonum spp.
large-fruited lomatium	Lomatium macrocarpum
large-leaved avens	Geum macrophyllum
*large-leaved rattlesnake orchid	Goodyera oblongifolia
leafy-bracted aster	Aster foliaceus
leatherleaf saxifrage	Leptarrhena pyrolifolia
lesser burdock	Arctium minus
Lewis' monkeyflower	Mimulus lewisii
long beech fern	Thelypteris phegopteris
low pussytoes	Antennaria dimorpha
*luetkea	Luetkea pectinata
*lupines[2]	Lupinus spp.
manna grasses	Glyceria spp.
marsh skullcap	Scutellaria galericulata
meadow horsetail	Equisetum pratense
medics	Medicago spp.
melic grasses	Melica spp.
*Merten's cassiope	Cassiope mertensiana
microseris'	Microseris spp.
mountain forget-me-not	Myosotis asiatica
mountain lady's-slipper	Cypripedium montanum
*mountain sweetcicely	Osmorhiza chilensis
Montana delphinium	Delphinium bicolor
narrow-leaved cow-wheat	Melampyrum lineare
narrow-leaved stephanomeria	Stephanomeria tenuifolia
narrow-petaled stonecrop	Sedum stenopetalum
*needle-and-thread grass	Stipa comata
northern bedstraw	Galium boreale
northern gentian	Gentianella amarella
northern maidenhair fern	Adiantum pedatum
northern red-fruited comandra	Geocaulon lividum
*northern twinflower	Linnaea borealis
northwestern sedge	Carex concinnoides
*Nuttall's pussytoes	Antennaria parviflora
*oak fern	Gymnocarpium dryopteris
old-man's whiskers	Geum triflorum
one-flowered wintergreen	Moneses uniflora

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[1] All fleabane species within the study area, other than subalpine fleabane, have been grouped together.

[2] All species of this genus in the study area are grouped.

Herbs (Continued)

*one-leaved rein orchid	Platanthera obtusata
one-sided wintergreen	Orthilia secunda
orchard grass	Dactylus glomerata
*Oregon wintergreen	Gaultheria ovatifolia
pale comandra	Comandra umbellata subsp. pallida
*pearly everlasting	Anaphalis margaritacea
penny cresses	Thlaspi spp.
*pine grass[1]	Calamagrostis spp.
poison-ivy	Toxicodendron rydbergii
*poverty oat grass	Danthonia spicata
*prairie koeleria	Koeleria macrantha
prairie sagebrush	Artemisia frigida
purple-leaved willowherb	Epilobium ciliatum
*racemose pussytoes	Antennaria racemosa
*red baneberry	Actaea arguta
*red mountain-heather	Phyllodoce empetriformis
reed canary grass	Phalaris arundinacea
rice grasses	Oryzopsis spp.
Richardson's sedge	Carex richardsonii
Ross' sedge	Carex rossii
rough fescue	Festuca scabrella
*rough-fruited fairybells	Disporum trachycarpum
*rough-leaved rice grass	Oryzopsis asperifolia
round-leaved sundew	Drosera rotundifolia
*rushes	Juncus spp.
*sagebrush mariposa lily	Calochortus macrocarpum
*Sandberg's blue grass	Poa sandbergii
sandworts	Arenaria spp.
*sedges	Carex spp.
shaggy fleabane	Erigeron pumilus
*showy aster	Aster conspicuus
showy Jacob's-ladder	Polemonium pulcherrimum
showy milkweed	Asclepias speciosa
*sickle-top lousewort	Pedicularis racemosa
silky lupine	Lupinus sericeus
silverleaf phacelia	Phacelia hastata subsp. hastata
*simple-stemmed twistedstalk	Streptopus roseus
*Sitka valerian	Valeriana sitchensis
slender blue penstemon	Penstemon procerus
slender hair grass	Deschampsia elongata
slender hawk's-beard	Crepis atrabarba
slender hawkweed	Hieracium gracile
slough sedge	Carex obnupta
*small western needle grass	Stipa occidentalis var. minor
small white violet	Viola macloskeyi
small-flowered blue-eyed Mary	Collinsia parviflora
small-flowered woodlandstar	Lithophragma parviflorum
small-flowered wood-rush	Luzula parviflora
*smooth wood-rush	Luzula hitchcockii
soft-leaved sedge	Carex disperma
spike trisetum	Trisetum spicatum
*spiny shield fern	Dryopteris assimilis
spotted coralroot	Corallorhiza maculata
spotted knapweed	Centaurea maculosa
*spreading dogbane	Apocynum androsaemifolium
*star-flowered false Solomon's-seal	Smilacina stellata
*stiff club-moss	Lycopodium annotinum
striped coralroot	Corallorhiza striata
*subalpine buttercup	Ranunculus escholtzii
*subalpine fleabane	Erigeron peregrinus
sulphur-flowered umbrellaplant	Eriogonum umbellatum

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[1] Most commonly occurring is Calamagrostis rubescens.

Herbs (Continued)

*sweet-scented bedstraw	Galium triflorum
sylvan goat's-beard	Aruncus dioicus
tall fringecup	Tellima grandiflora
thistles	Cirsium spp.
thread-leaved phacelia	Phacelia linearis
*timber milk-vetch	Astragalus miser
timothy	Phleum pratense
*trailflower	Adenocaulon bicolor
trifoliate-leaved foamflower	Tiarella trifoliata
upland delphinium	Delphinium nuttallianum
*violets[1]	Viola spp.
weak false manna	Torreyochloa pauciflora
*western blue clematis	Clematis occidentalis subsp. grosseserrata
*western bracken	Pteridium aquilinum
*western fescue	Festuca occidentalis
western golden ragwort	Senecio pseudaureus
*western meadow-rue	Thalictrum occidentale
*western pasqueflower	Pulsatilla occidentalis
*western spring beauty	Claytonia lanceolata
western white trillium	Trillium ovatum
*western wild ginger	Asarum caudatum
white cinquefoil	Potentilla arguta
*white globeflower	Trollius laxus
*white-flowered hawkweed	Hieracium albiflorum
*white-veined pyrola	Pyrola picta
whitlow grasses	Draba spp.
wild bergamot	Monarda fistulosa
*wild sarsaparilla	Aralia nudicaulis
witch grass	Panicum capillare
wood horsetail	Equisetum sylvaticum
wood reed grass	Cinna latifolia
*wood strawberry	Fragaria vesca
*yellow glacier lily	Erythronium grandiflorum
yellow willowherb	Epilobium luteum
yellow wood violet	Viola glabella
yellowbell fritillary	Fritillaria pudica
yerba buena	Satureja douglasii

Mosses and Lichens

brachytheciums	Brachythecium spp.
cladonias	Cladonia spp.
*common moss	Pleurozium schreberi
*green-stemmed pipecleaner	Rhytidiopsis robusta
grimmias	Grimmia spp.
*hairy-cap mosses[1]	Polytrichum spp.
hypnums	Hypnum spp.
*large cushion moss	Dicranum scoparium
*mniums[1]	Mnium spp.
*red-stemmed pipecleaner	Rhytidiadelphus triquetrus
*small cushion moss	Dicranum fuscescens
sphagnums	Sphagnum spp.
*step moss	Hylocomium splendens
*thin cushion moss	Dicranum strictum

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[1] All species of this genus in the study area are grouped.

appendix B

MAPS AND DATA IN THE STUDY AREA

B. MAPS AND DATA IN THE STUDY AREA

B.1 AVAILABLE MAPS

a. Vegetation Types of the Adams River Drainage

Map of vegetation types produced for a resource analysis study of the Adams River, on a 1:20 000 scale.

b. Present Vegetation of the Adams River Drainage

Map of present ecological condition (now landscape units) produced in a resource analysis study of the Adams River, on a 1:20 000 scale (Appendix IV-3-1 of Adams River - A Resource Analysis).

c. Vegetation Types of the East Canoe Drainage

Map of vegetation types produced in a multi-discipline study of the East Canoe drainage, at a 1:50 000 scale.

d. Forest Zonation/Present Ecological Condition Maps

These maps at 1:50 000 are available for all of 82L. Zones and subzones are depicted as well as present vegetation landscape units.

B.2 AVAILABLE DATA

a. Adams River - A Resource Analysis. 1977. Analysis/Interpretation Division, Resource Analysis Branch, Victoria.

This report is a resource analysis study of the Adams River drainage. Included are vegetation type descriptions, interpretation of vegetation types for sensitivity and visual attributes and a species list.

b. Visual Analysis of Common Plants in the Spallumcheen Municipality, 1975. Vegetation Section, Resource Analysis Branch, Ministry of Environment, Kelowna, B.C.

c. Computer printouts of floristic data; synthesis table or constancy table may be requested.

Requests for Forest Zonation/Present Ecological Condition maps should be addressed to:

Map Library
Assessment and Planning Division
Ministry of Environment
Parliament Buildings
Victoria, B.C.
V8V 1X4

All other requests should be addressed to:

Manager
Ministry of Environment
Terrestrial Studies Branch
Parliament Buildings
Victoria, B.C.
V8V 1X4

LIST OF APD BULLETINS

A BULLETIN is one of four Regular Publication series produced by the Division. (This series replaces the former Resource Analysis Branch series). Bulletins present the results of technical or scientific studies including the interpretation or application of resource data.

APD BULLETIN 1 - Saanich Peninsula Spring-Time Freeze Risk. R.R.H. Chilton.

APD BULLETIN 2 - Soil and Vegetation Resources of the Pend-d'Oreille Valley, B.C. T. Vold, R.F. Ferster, T.K. Ovanin, R.D. Marsh, G.P. Woods.

APD BULLETIN 3 - Regional Hydrology of the Northeast Coal Study Area. Michael J. Miles.

APD BULLETIN 4 - Studies on Aquatic Macrophytes Part XXXI. J.R. Rudolph, C.E.W. Dyer.

APD BULLETIN 5 - Terrain Inventory and Geological Hazards: Northern Vancouver Island. D.E. Howes.

APD BULLETIN 6 - Killer Whales and Coastal Log Management: An Overview of Future Uses of Robson Bight, British Columbia. The Robson Bight Study Team.

APD BULLETIN 7 - Biophysical Resources of the East Kootenay Area: Terrain. J.M. Ryder.

APD BULLETIN 8 - Biophysical Resources of the East Kootenay Area: Outdoor Recreation. L.E. (Beth) Collins.

APD BULLETIN 9 - Oil Tanker Traffic: Assessing the Risks for the Southern Coast of British Columbia. W.H. Wolferstan.

APD BULLETIN 10 - Resources of the Graystokes - Report to Task Group. Technical Subcommittee.

APD BULLETIN 11 - Fraser River Estuary Study, Water Quality, Dry Weather Storm Sewer Discharges. M. Clark, P. Krahn, J. Walker.

APD BULLETIN 12 - Phosphorus Retention of Shawnigan Lake Watershed Soils: Management Implications for Subsurface Disposal Systems. N.K. Nagpal.

APD BULLETIN 13 - Shawnigan Lake Watershed Study: Background Report 1. Use of Percolation and Hydraulic Conductivity Measurements in Design and Management of Soil Waste Disposal Systems. N.K. Nagpal.

APD BULLETIN 14 - Shawnigan Lake Watershed Study: Background Report 2. An Evaluation of Use of Ceramic Cup Soil Water Samplers in Nutrient Transport Studies. N.K. Nagpal.

APD BULLETIN 15 - Eurasian Water Milfoil Studies Volume 1: The Effect of Eurasian Water Milfoil (MYRIOPHYLLUM SPICATUM L.) on Fish and Waterfowl in the Okanagan Valley, 1977. M.C. Robinson.

APD BULLETIN 16 - Kootenay Air and Water Quality Study, Phase II: Water Quality in the Upper Columbia River Basin.

APD BULLETIN 17 - Studies on Aquatic Macrophytes Part XXXIV - The 1980 Aquatic Plant Quarantine Project. R. Dove and M. Wallis

APD BULLETIN 18 - Fraser River Estuary Study, Water Quality, Survey of Dissolved Oxygen in 1978. W. A. Bergerud, L. J. Alexander.

APD BULLETIN 19 - Vegetation Resources of the Vernon Map Sheet Area. Volumes 1 and 2. C. J. Clement.